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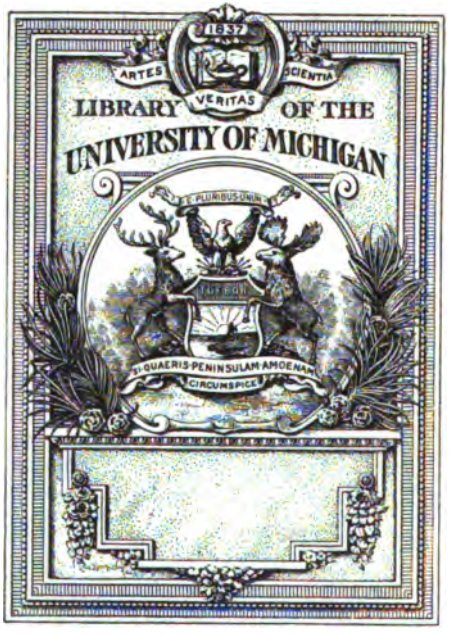
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ON

COMMERCE, MANUFACTURES, ETC.

No. 105.—MAY, 1889.

AMERICAN MINING INTERESTS IN MEXICO.

REPORT BY SECRETARY OF LEGATION WHITEHOUSE.

To those interested, the Mexican mining laws and the Government publications on the mineral resources of the Republic will be well known; but the object of the present report is to show, in as far as has been found possible, the number of American owned and worked mines in this country, their situations and names, the character of the ore, the yearly output of same, the means of transportation, the cost of labor in the various districts, the cost of chemicals, etc., and especially the extent to which American-made machinery is used and the satisfaction it gives.

There are several mines in the vicinity of the City of Mexico in which Americans are interested, but I have been refused any information concerning them, while to my letters to others situated in the adjacent states of Morelos and Hidalgo I have not even received acknowledgments.

I have also no report to make on any mines in the state of Guanajuato, although I am assured that Americans are working small claims there, as also to the south in the state of Michoacan.

From the state of Chihuahua, owing to the courtesy of our consul, Mr. Heimké, and to the managers of several mines, I have been able to gather some information of the following mines, worked exclusively by Americans, and with American capital, namely: The Batopilas Mining Company (silver), Santa Eulalia (silver), Philadelphia Mining Company (silver), El Refugio Mining Company (silver and gold), Torreon Mines and Smelter, (copper, silver, and gold).

BATOPILAS MINES.

The Batopilas mines are situated to the southwest of the town of Chihuahua, not far from the state of Sinaloa, and the groups of mines and veins number some one hundred and fifty, the size of the concession being 40,000 acres, or nearly 62 square miles. Native silver and, in some parts, gold is extracted. The processes by which the ores are reduced are by amalgamation, concentration, chloridizing, and leaching. The machinery used in these mines for hoisting, pumping, etc., comes from the United States; but as the mines are dry very little is used. The stratum where the paying ore is found is of diorite (green stone), the lowest shafts are sunk about 800 feet, and the workings extend over nearly 90 miles. An average of 10,000 tons of ore is annually extracted from the mines. The means of transportation are entirely by pack-mules, and at a cost of from $60 to $80 (Mexican)* per ton, the distance to the nearest railway being considerably over 100 miles. All ores are reduced at the mines, the grades varying from $15,000 to $15 per ton. The low-grade ores, yielding from 15 to 25 ounces per ton, are concentrated. The cost of timber for mining purposes is 40 cents per cubic foot; salt, mercury, and sulphate cost, respectively, 4.75 and 15 cents per pound; wood averages $11 per cord.

Miners receive from $2 to $3 per diem; laborers, $1.25 per diem. This last would appear very high in comparison to the wages received by peons in other districts, which range from 12½ to 75 cents a day. From five hundred to one thousand men are continuously at work on the properties of the Batopilas Mining Company.

In an account of the Batopilas district written by Mr. G. Salas at the end of last year I find the following interesting details: The wages of the laboring classes have largely increased, owing to the enterprise of this company, for the miners who formerly received from 75 cents to $1 per day are now earning from $2 to $3. The principal mines of the Shepherd syndicate are the following: Santa Martina, La Aurora, Santa Maria, Ballinas, La Vaca, Martinez, San Pedro, Roncesvalles, Cinco de Mayo, the various veins constituting the group named Camuchin, and those of Descubridora, all of which are situated in the mountains on the west side of the river of Batopilas. The veins, which are crossed by the San Miguel tunnel, named Los Fierros, El Giral, Mezquite, Veta Grande, Carmen, Cinco de Mayo, and San Antonio, are situated on the east side.

In nearly all of its properties the company has executed works of importance. With the exception of San Miguel, the old works in any of the mines never attained a depth of 40 meters perpendicular. Mr. Shepherd has driven tunnels in the greater number at depths of 100 and 200 meters below the old workings. These tunnels, which are now in communication with the old works, are not sufficient to provide economically for the exploration of the lower sides of the veins, and the opening of the general tunnel, Porfirio Diaz,

* Throughout the report all prices, valuations, etc., are given in Mexican currency. The Mexican dollar is now (May, 1889,) rated at from 36 to 38 per cent. discount.

became necessary. Among other tunnels are the following: San Miguel, 415 meters in length; Giral branch, 165 meters; Giral tunnel, 195 meters; Valenzuela, 187 meters; Aurora, 75 meters; Ballinas, 485 meters; San Juan, 135 meters; Palo Blanco, 35 meters; Vaca, 78 meters; lower tunnel in Vaca, 57 meters; San Miguelito, 27 meters; Crumys tunnel in Martinez, 265 meters; San Pedro, 125 meters; Cinco de Mayo, 183 meters. In the Roncesvalles vein are the following: Tunnel No. 1, 260 meters; No. 2, 235 meters; No. 3, 227 meters; No. 4, 18 meters; No. 5, 27 meters; No. 6, 29 meters; Estrella, 143 meters; Obra Morris, 205 meters; Roncesvalles, 465 meters; lower Roncesvalles, 477 meters; Penasquito, 577 meters; Esperanza, 345 meters; Consolacion, 148 meters. In the veins of Camuchin are the Robert Duff tunnel, 275 meters; the Washington, 355 meters; San Antonio de los Tachos, 345 meters. In the Descubridora veins we find the Trinidad, 205 meters; Descubridora, 257 meters; Del Agua, 77 meters; Animas, 143 meters, making, altogether, 7,190 meters of dead work. All these tunnels are from 2 to 2¼ meters in width by two in height, and have rail track laid upon which cars run drawn by mules.

The rock in which these workings have been excavated is very hard and consistent diorite, which is found to cross all the veins. The cost per meter, including tracks and rolling material, can be computed at from $90 to $100.

The Hacienda de San Miguel, situated on the left bank of the Batopilas River, at a distance of a little over 1,000 meters from the town, is composed of two separate works, which, though inclosed by the same walls, are moved by different motive powers. The smaller of the two has in operation two turbines of 15 horse-power each, moved by the water from the river, which is collected at a provisional dam and is carried to the works in a ditch 400 meters in length. The fall obtained is of 15 meters, and the volume of water something more than half a cubic meter. One of the turbines moves a battery of fifteen stamps of 350 pounds, and the other the pans and settlers. The large mill is composed of two steam-engines of a combined power of sixty horse, one of which moves a battery of thirty stamps of 758 pounds and twelve Frue vanners, and the other the pans and settlers.

Although, in the Batopilas mines, as a rule, the principal factor in the yield is native silver, and that sulphurets and sulphurets of silver are of but secondary importance, yet some of the mines (San Miguel, Camuchin, Roncesvalles, Descubridora, etc.,) produce no mean quantity of first and second class metals and a very abundant supply of third-class, carrying from 20 to 30 ounces per ton. The body of these ores, which is clayey and calcareous, carries silver in the native state and in sulphurets of silver, and in various others, such as galena, blende, and pyrites of iron, in sufficient quantity to resist the treatment of amalgamation in pans; so that after the ore is crushed and has passed through the pans, leaving in them the native silver, the residue is subjected to the treatment of lixiviation. In the small mill the third-class metals are treated, which pass from the large battery to the Frue vanners, where they are concentrated from 3 to 400 ounces per ton; from thence they go to the pans, and finally to the lixiviation vats.

The reduction of ore on this hacienda is expensive, as wood costs $1 per load of 300 pounds, and in the rainy season can not be had at any price.

In the Descubridora mine, which is situated on the extreme western verge of the concession, Mr. Shepherd has constructed a mill for the reduction of the lower grades of ore from that group of veins. Reduction there is much more economical, for, besides the saving of freight, which would amount to from 50 to 75 cents per load, wood costs only 50 cents a load, owing to the elevation of the site of the hacienda, which is about 700 meters above the level of the river, and brings it near to the high mountains, where fuel is yet abundant. These works contain a steam-engine of 15 or 20 horse-power, which moves a five-stamp battery, two Frue vanners, two pans, one settler, and the pumps which raise the water to a reservoir of stone and mortar 20 meters square by 2 in height.

The principal working of the company, and on the result of which its future, in a measure, depends, is the Porfirio Diaz Tunnel. This tunnel is being pushed with the greatest activity, but the hardness of the rock and the scarcity of labor has reduced the progress made in two years of uninterrupted tunneling to 370 meters. With the new machinery in use, however, it is expected that a steady advance of over 10 meters per week will be made. Thus the tunnel will soon commence to give practical results, and can be completed in five or six years. Although the efforts of the company are now principally directed to the completion of this tunnel and its tributary shafts, the necessary works on the mines are being prosecuted for the extraction of the ores, and will be continued until such time as the tunnel allows of a more economical exploration of this very important portion of the mineral. From the Penasquito Tunnel, which is on a level with the lowest workings of Roncesvalles, a mountain railroad is being constructed, which runs a distance of 1,500 meters up to the ridge overlooking the Hacienda San Miguel. From this terminus a cable road will be erected with a view to carrying the ores from the Roncesvalles group of veins directly into the bins of the large battery of the hacienda. This railroad was to have been completed in December last, but I am not informed if it has been.

The San Miguel mines are also connected with the hacienda by a railroad worked by mules, which is 1,300 meters in length. Another improvement, which will contribute largely to the development of the district, is the construction of the San Antonio Hacienda, which will be run solely by water from the Batopilas River. This hacienda is situated near the mouth of the Porfirio Diaz Tunnel. The dam, or reservoir, is some 3 kilometers distant from San Antonio, up stream, and the aqueduct (which is near completion) measures 2½ meters in width by 2 in depth. The fall obtained is about 20 meters, and as the river brings, in the dry season, a volume of 1½ cubic meters of water, a steady power of 300 horse can be relied on the year round. It is hoped that these works will be complete in June. They will enable the company, when completed, to reduce profitably the abundant low-grade ores yielded by the several mines of San Miguel, Roncesvalles, and Camuchin.

An iron suspension bridge will be thrown across the river and put in communication the Hacienda San Antonio with that of San Miguel and the mines of the same name. A system of telephones connects the Hacienda San Miguel with the greater number of the mines. During the rainy season there is a scarcity of workmen, but the balance of the year, say from November to June, the weekly pay-roll ranges from $8,000 to $10,000.

EL REFUGIO MINE.

In the Sierra Madre range, near the town of Jesus Maria, is situated the American-owned mine of El Refugio, connected by tramway and railway with a twenty-stamp mill, purchased in the United States.

Gold and silver are found here, but I am not informed as to the yearly output of either. The deepest working is 200 feet, and the ledge from 9 to 30 feet. It is found profitable to reduce ore yielding 15 ounces.

Lumber for mining purposes costs $60 per 1,000 feet and square timber $40 per 1,000. Salt is $100 per ton, quicksilver 75 cents per pound, and wood $4 per cord. Wages for native labor is $1.50 per diem; for foreign, from $4 to $6 per diem.

The mineral district of Jesus Maria y José is one of the most extensive in Chihuahua, and probably there are other American interests there of which I have not been able to obtain information. It is stated that the deep ravines in which the claims are situated appear to be a complete net-work of silver-bearing veins, with a ley of gold, adding about 25 per cent. to the value of the silver. In this district is situated the Santa Juliana mine, discovered in 1822, which, from that date till 1836, when the river flooded the mine, produced nearly $30,000,000, the ore as it came from the mine being worth $1 a pound. In 1866, this mine was still unworked, and it was estimated by Mr. Middleton, of the British legation, that it would require an expenditure of at least $50,000 to remove the water.

SANTA EULALIA MINES.

The Santa Eulalia Silver Mining Company, working about thirty mines, is located near the city of Chihuahua. In early days the voluntary contribution of one real (12½ cents) on every mark of silver extracted from these mines proved sufficient for the defrayment of the expense incurred in the erection of the cathedral of the city of Chihuahua, one of the finest in Mexico.

The concession covers 6 square leagues. The silver ore extracted is treated by amalgamation and pan process. The machinery used comes from Chicago and San Francisco.

The paying ore is found in strata of porphyry with limestone, and the mine, which is dry, is sunk some 600 feet. Machinery for hoisting is worked by steam, and came from New York. The output, presumably, of the several mines worked by this company is about 75,000 tons, none of which is exported, it being conveyed on donkeys and by the company's tram-car line to their mill. All ore over 8 ounces is reduced, it having been found that it does not pay to ship grades under 30 ounces.

Timber costs $50 per 1,000 feet, coal $14 a ton, and wood 50 cents a donkey load. Salt, quicksilver and sulphate, respectively, $22, $70, and 8 cents. Labor ranges from 50 cents to $1.50 a day. Up to the present the bullion is sold in Chihuahua.

PHILADELPHIA MINES.

In the Cerro de la Cruz, near Parral and Jimenez (Mexican Central Railroad), are situated the Philadelphia mines, covering a concession of 200 by 800 yards. Silver and lead are mixed here, the ores being reduced by lixiviation. Machinery, crushers, furnace, etc., come from Chicago and New York. The ore is found in a hanging wall, the mine being wet and 350 feet in depth. Machinery for pumping and hoisting is used, all of which is imported from the States. The ore is transported by road to Yiminez at the rate of from 75 cents to $1 per load of 300 pounds. The yearly output is not mentioned. Timber for the mines costs about $65 per 1,000 feet; chemicals and wood about the same rates as those given for Santa Eulalia mines. Native wages, from 50 cents to $1.50 per diem. The bullion is sent to Chihuahua at from 1 to 1½ per cent. of value.

TORREON MINES AND SMELTER.

The Torreon mines are a half-mile distant from the Mexican Central railway station of Yerrazas, in the district of Iturbide, state of Chihuahua. The works extend over thirteen claims, each 200 meters square. The nature of the ore is copper carrying both silver and gold. The process adopted is smelting. Water-jacket furnaces and accompanying machinery come from Chicago, and no machinery is needed for hoisting tram-cars running into the shafts; also, the mine being perfectly dry, no pumping machinery is necessary. The strata worked is of garnet rock and porphyry. The total output in past years has averaged 6,000 to 7,000 tons. The average grade is 7 per cent. copper, 5 to 6 ounces silver. All ore is hand-picked and refuse thrown on a dump. From the mines the ore is carted to smelter, about one-half mile, at a total cost of about 15 to 20 cents a ton. No timber is used in mines. Coal costs about $10 and coke about $12 (American currency) a ton. Miners receive $1, laborers 50 to 75 cents per diem. The copper bullion is all sent to Hamburg, Germany, at a cost of $26 per ton. No ore is exported.

From the state of Sinaloa (on the Gulf of California) I have reports from only two mines in which our countrymen are largely interested, the Tajo and El Cármen.

TAJO MINE.

The Tajo mine is situated in the Rosario district of the state of Sinaloa, to the south of the important port of Mazatlan, and near the city of Rosario. Gold and silver are mined here, the processes adopted being by amalgamation and pan. Machinery comes in part from Mexico and in part from the United States. That used in hoisting and pumping comes entirely from the United States. The mine is somewhat wet, and the strata where the paying ore is

found is between well-defined hanging and foot walls. The depth is about 600 feet, and the annual output of ore nearly 30,000 tons. Grades from 5 ounces up are reduced, the lower grades of ore being kept on hand. The advantages are all in favor of local reduction, and consequently no ore is exported.

EL CÁRMEN MINE.

The concession of the Cármen mine is 1 by 2 leagues, and lies in the district of San Ignacio, near the town of the same name. Silver, with a small percentage of gold, is extracted and the ore reduced by stamp-mill. All machinery used, including that for pumping and hoisting, comes from San Francisco. The ore is taken from a fissure vein (not in stratification), and the average for the last eight years shows an annual output of 4,000 tons.

The mine is dry. The depth at west end is 1,100 feet, and at the east end 900 feet. It pays to reduce ore of 30 ounces and to export from 200 up. Low-grade ores, 12 to 15 ounces, are thrown on the dump. Advantages are in favor of reducing ore on the spot, and none is exported at present. The means of communication are by pack-mule to Mazatlan, and the cost about $8.50 per load of 300 pounds. Timber for mining purposes averages 4 cents a foot; salt, $8 per 300 pounds; quicksilver, 65 cents per pound; sulphate, 10 cents per pound. Charcoal and wood are expensive. Wages for drillers are $1.50, for peons 75 cents to $1, and for mechanics $3 to $4 per diem. It costs $9 a bar to transport bullion to Mazatlan, from whence it is shipped to San Francisco.

We now come to the state of Sonora, a very rich one for all mining purposes. Five American companies have sent me more or less detailed accounts of their works, and I am also able, through the courtesy of our consul, Mr. Willard, to give names, character, estimated values, etc., of several others of minor importance.

MINAS PRIETAS.

To begin with the district of Hermosillo, on the Sonora Railway, at Torres station, are the gold and silver producing mines of Prietas. The size of this concession is 1,600 by 600 meters, the rock being quartzite, or sienite, the vein matter quartz. The mine, which is wet, runs down 665 feet. The machinery used in hoisting, pumping, etc., comes from the Union Iron Works, of San Francisco, with the exception of the pumps, which are made in Cleveland, Ohio. Thirty thousand tons of ore are annually taken from the mines, which is reduced on the spot by free amalgamation in pans by what is called the continuous process. Ore yielding $8 per ton pays to reduce; those ranging from $2 to $6 per ton are not used. Transportation by wagon comes to $5 a ton. Timber costs $60 per thousand feet; wood, $5.50 per cord; quicksilver, 2 cents per pound added to current rates in San Francisco. All bullion is exported to San Francisco and costs, to destination and including duties, about 10 per cent. of value. Wages for native miners are $1.25 per diem; surface hands receive only 75 cents. The owners estimate the value of their property at half a million of dollars.

CRESTON AND COLORADO MINES.

In the same district, and near the same railroad station of Torres, are found the Creston and Colorado mines, owned in Cleveland, Ohio, consisting of two claims 800 by 200 yards. The ore is said to contain gold and silver in about equal parts, and is reduced by process of raw amalgamation in pans. Both mines are wet, and pumps and hoisting machinery are used, which come from the United States. The strata where the paying ore is found is in fissure veins in syenite formation. Some 30,000 tons are extracted yearly. The Creston mine runs down 415 feet, the Colorado 200 feet. Grades of $12 to $15 a ton are reduced; if below $6 or $8 it does not pay to work them. No ore is exported. Timber, wood, salt, quicksilver, etc., costs about the same as at the neighboring mines of Prietas, just described. The value of the property is difficult to estimate. The owners have invested about $325,000 in the mines and plant, and consider the property worth several times that sum.

MINES OF NOCHE BUENA, SANTA FÉ, AND SANTA ANA.

Still in the same district of Hermocillo, 94 miles distant from the railroad station of Ortiz, is a group of three mines, the Noche Buena, Santa Fé, and Santa Ana, each covering a concession of 800 by 200 meters. These produce silver and lead ores, 2,500 tons of which are yearly extracted from strata of green stone andslate. Ore yielding $60 pays to reduce, that giving $200 to export.

The hacienda is provided with a ten-stamp mill, also a 10-ton concentration plant. The best improved machinery for hoisting (the mines are about 350 feet deep), pumping, etc., is imported from the United States and Germany. Wagon and mule trains are plentiful, and transport the ores at $20 a ton. It is advantageous to export the high-grade ore, and this is sent to Denver, Colo., at a total freight expense of about $36 per ton. Wood costs $4 a cord; salt, $5 per 300 pounds. Wages begin at 75 cents and run up to $1.50 per day.

SANTA CLARA COAL MINES.

The same company also run the anthracite coal mines of Santa Clara, but I have no particulars concerning them beyond the mention that the coal needed at the silver mines comes from them, and that their value is estimated at $200,000. This is also the value set upon the silver mines.

LA PRIETA, LA DURA, AND LA RAMONA MINES.

La Prieta, La Dura, and La Ramona are three mines belonging to La Dura Mining Company, situated 90 miles from the railway, in the district of Alamos, Sonora. The concessions for these mines cover 1,000 by 200 meters each. The process adopted for the reduction of the ores is that of concentration, the motive power is water, and the machinery used is imported from Germany. The hoisting engine was built by Fraser & Chalmers, of Chicago. For high-grade ores exportation offers a decided advantage; in consequence such are shipped to Denver, Colo., the freight charges (presumably for rail

transportation alone) amounting to $16 per ton. From the mines to the railroad station of Ortiz, a distance of 90 miles, the ore is transported by mules.

Native hard timber for mining purposes costs only $15 per 1,000 feet, while fire-wood is $2.50 a cord. Drillers receive $1 a day; ordinary labor is paid 75 cents. The owners estimate their mines to be worth $700,000.

GAVILAN MINES, HERMOSILLO.

Thirty-five miles from Hermosillo, the capital of the state of Sonora, and 27 miles from the station of Pesquiera on the Sonora Railroad, is a group of silver mines known as the Gavilan mines.

These are named respectively La Juanita, Porvenir, San José, and La Luz. The greatest depth at present attained is 200 feet. Reduction works are now in course of erection. The ten-stamp crushing mill comes from the States. The average grade of ore is from $30 to $35 per ton, without reference to the higher grade ores met with at intervals. Ore yielding $12 a ton can be worked with a profit. Wood costs $3 a cord, and salt delivered at works $20 a ton.

In the dumps, and in actual sight in the mines, there is estimated to be some 20,000 tons of ore. During the last eight years the mines have been worked, but more especially during the last two years the opening up of the mines has been carried on with a view to the future erection of machinery for treatment of ore. In above calculation no estimate whatever has been made for ore that can not be measured.

The following is a list of American mining interests in the consular district of Guaymas, Sonora, but of which no details are at hand:

Name of mining corporations.	Where situated.	Class and character of ores.	Value of mines by owners.	Machinery from United States.
San Ricardo Mining Company	Ures district	Gold and silver	$250,000	Steam.
San Felipe Mining Company	Altar district	do	500,000	Erecting.
Planchas Mining Company	Magdalena district	do	250,000	Do.
Plata Mining Company				
San Pablo Mining Company	Moctezuma district	do	300,000	Steam.
Moctezuma Mining Company	do	do	500,000	Do.
Lampazos Mining Company	do	Silver and lead	500,000	Erecting.
Bacauri Mining Company	Alamos district	Silver and gold	400,000	Steam.

In addition to those mines mentioned in the foregoing table quite a number of small workings exist in the state, but of which I have not even been able to learn the names or exact locations.

OSO NEGRO AND LA UNION MINES.

Silver, carrying lead and zinc, is found here in two mines a couple of miles apart, namely the Oso Negro and La Union mines. The former is sunk 500 feet; the latter has a tunnel 750 feet in length; both are wet. The Oso Negro is equipped with steam hoisting plant. The erection of a twenty-stamp chloridizing mill, built in Chicago, will be shortly begun.

The owners estimate the value of their property at $100,000, but, as far as I have been able to learn, the mine is at present undeveloped. The following statement of shipment of ore via El Paso during one week may be of some interest. I have no returns at hand from Laredo, Piedras Negras, or Nogales:

Silver ore.

Importer.	No. of tons.	Value.
Philadelphia Smelting and Refining Company	20	$1,213
Denver Public Smelting Works	21	1,489
Kansas City Smelting and Refining Company	16	5,556
Rio Grande Smelting Company	70	8,662
Kansas City Smelting and Refining Company	910	40,023
Rio Grande Smelting Company	739	17,524
Kansas City Smelting and Refining Company	332	13,478
Rio Grande Smelting Company	70	3,428
Total	2,178	91,373

Coin and bullion imported by Wells, Fargo & Company.

Silver coin	$163,563
Gold coin	8,900
Silver bullion	22,193
Gold bullion	699
Total	195,355

From the territory of Tepic, of which San Blas, on the Pacific, is the principal town, I have but one mine reported.

LAS ANIMAS MINE.

The Animas mine, in the district of Acaponeta, and in the neighborhood of the town of the same name, has a concession of 600 by 100 meters, and a mill site. Gold and silver are mined here from a strata of porphyry. The mine runs down some 280 feet, and is wet. Hoisting and pumping machinery comes from San Francisco. The extraction of ore commenced in the latter part of last year (1888), and the monthly output now averages 300 tons. Dry crushing, chloridizing, and amalgamation are employed in working the ore, the machinery for which also comes from San Francisco. It pays to reduce $35 ore, and to export $300 ore. Below $35 grade nothing is done with the ore. When exported, the ore is conveyed either by cart or pack-train, at an expenditure of $35 per ton, to Mazatlan, and thence by sea to San Francisco. The cost of sending bullion to the same destination, exclusive of Mexican duty, is 6 cents an ounce. Miners and mechanics receive $1.50 a day; laborers, 75 cents.

VALLOSILLO MINES.

The Hacienda de Dolores of the Vallosillo mines has sent me the following details concerning the property; the concession comprises practically all of the mineral district, and is in the Vallosillo district, near railway sta-

tion of Veilaldama (Mexican National Railroad). Silver and lead, averaging 1,200 tons of ore per annum (during the last eight years), is worked here. The ore is for the most part lump galena. That mixed with rock is separated and reduced on the spot by means of crushers and gigs. The formation of the strata in which the paying ore is found is of shaly lime and clay stone. The depth of the principal working shaft is 450 feet, and the mine is wet below a certain depth. Steam is used in hoisting and pumping, the machinery being all of American make. It is stated that nearly all of the ore is exported to the United States, and that there are no low-grade ores extracted. The transportation is by means of carts to the town of Veilaldama and thence by Mexican National Railroad to the United States. Fire-wood costs $1 per cord. Wages for surface labor range from 50 to 75 cents a day; miners receive from 75 cents to $1. I am informed that no other mining is done in this district.

GUADALUPE AND VALATORO MINES.

In the Igüana mining district, near the town of Lampazos (Mexican National Railway, near Laredo), are the Guadalupe and Valatoro mines, belonging to the San Antonio de la Igüana Mining Company. The first-named mine extends over a concession of 240,000 meters, the second over 180,000 meters. Gold, silver, and lead ores are treated by smelting. Concentration will shortly be established. The output is at present very small, but with improved machinery it is estimated that it will be very considerable. All of said machinery will come from Fort Scott, Kans. At present it pays to reduce 5 per cent. lead with 10 ounces silver; ore less than $45 per ton is not exported. No timber is needed for the mines. Fire-wood costs $6 a cord. The Valatoro is an old Spanish mine and has been worked to a great extent; the Guadalupe is a new vein.

STATE OF TAMAULIPAS, SAN JOSÉ DISTRICT.

I have rather vague and unsatisfactory accounts from the mining district of San José, state of Tamaulipas. There would appear to be very few Americans interested there, and their interests very small. About 15 miles from the town of San Carlos, in the San José district, there are quite a number of old and abandoned mines that were worked by the Spaniards for copper, of which metal there are numerous croppings upon the surface. Later investigations have proven that the iron ores that abound in this district are more or less impregnated with gold in pyrites and in a free state. As a consequence of this discovery several of what are supposed to be the best bodies or veins of this ore have been "denounced" and possession given by the proper authorities. The names of mines thus denounced are the Imogene, Bretaña, Vergonia, and Negra. The first mentioned belongs to Americans,* and has a concession of 800 by 200 meters. Considerable work in developing has been done on the Imogene. The others have only been opened far enough to comply with the requirements of the mining laws of the country. Ores

* This is doubtful, I am told.

from these mines assay from $10 to $240 per ton, in gold. The strata is principally porphyry and quartzite. The Imogene has been run down about 150 feet. No ore has as yet been reduced or shipped. Miners' wages are 50 cents a day; drillers get 75 cents. The country around the mines is well timbered with different kinds of oak. Pine grows on the higher ridges of the mountains. Prices of timber for mining or other purposes are nominal. Since writing concerning the mines in the state of Sonora I have had some information concerning a small mine situated in the Arizpe district, and near that town and railway station.

H. REMSEN WHITEHOUSE,
Secretary of Legation.

UNITED STATES LEGATION.
Mexico, May 7, 1889.

TRADE OF JAPAN IN 1888.

REPORT BY MINISTER HUBBARD, OF TOKIO.

I have the honor to transmit herewith the annual return of the foreign trade of the Empire of Japan for the year 1888, published by the Japanese bureau of customs. From this report it will be seen that the value of the commodities exported from Japan during said year amounted, in Japanese silver yen,* to 65,705,510, and the imports to 65,455,234 yen, which is a total foreign trade of 131,160,744 yen and an excess of exports over imports of 250,276 yen. The figures as above given for 1888 show an increase of exports over 1887 of 13,296,287 yen, and an increased import of 13,755,465 yen, which is an increased foreign trade over the previous year of 27,051,752 yen.

EXPORTS AND IMPORTS.

Exports, by Countries, in 1888.

Countries.	Value.	Increase over 1887.	Countries.	Value.	Increase over 1887.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
United States	22,618,483	1,089,217	Canada and Brit. America	857,323	143,149
France	13,636,250	4,107,854	Corea	707,175	155,267
China	11,426,714	456,671	Italy	705,988	151,012
Great Britain	8,710,012	4,231,283	Austria	638,394	103,312
Germany	1,617,564	695,841	East Indies	457,078	3,606

* One silver yen = 73.4 cents American.

Imports, by Countries, in 1888.

Countries.	Value.	Increase over 1887.	Countries.	Value.	Increase over 1887.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
Great Britain	28,693,367	9,723,023	Germany	5,260,896	1,249,981
China	10,360,134	2,374,314	France	4,125,189	1,811,844
East Indies	7,689,092	2,397,478	Corea	1,041,764	31,390
United States	5,648,733	2,365,637			

The following table shows in round numbers the principal articles exported from Japan in 1888 compared with the value of same articles exported in 1887:

Exports by articles.

Articles.	Value.		Articles.	Value.	
	1888.	1887.		1888.	1887.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
Antimony	153,000	163,000	Paper-ware	78,000	60,000
Awabi (shell fish)	435,000	361,000	Peppermint oil	33,000	76,000
Bamboo-ware	217,000	218,000	Porcelain-ware	1,295,000	1,311,000
Camphor	1,017,000	1,130,000	Rags	316,000	253,000
Bronze-ware	205,000	228,000	Salmon and cod	73,000	55,000
Coal (except for ship's use)	1,197,000	496,000	Sea-weeds	373,000	461,000
Cocoons	160	45,000	Sea-weed, cut	122,000	132,000
Cocoons pierced	225,000	216,000	Rice	7,421,000	2,255,000
Copper:			Screens	304,000	276,000
Ingot	1,526,000	1,279,000	Shark's fins	103,000	84,000
Sheet and bar	1,992,000	752,000	Shrimps	203,000	156,000
Copper-ware	42,000	55,000	Silk:		
Cotton:			Raw	25,916,000	19,280,000
Floor cloths	52,000	19,800	Tama	491,000	111,000
Piece goods	149,000	169,000	Noshii	1,434,000	1,264,000
Cuttle-fish	1,072,000	1,052,000	Waste	944,000	807,000
Fans:			Handkerchiefs	1,234,000	1,146,000
Round	57,000	54,000	Piece goods	258,000	135,000
Other	280,000	248,000	Soap, washing	35,000	36,000
Fish-oil	64,000	37,000	Straw plaits	268,000	350,000
Floss silk	181,000	158,000	Sulphur	120,000	136,000
Furs	59,000	34,000	Tea:		
Hides	57,000	151,000	Green and black	5,886,000	7,350,000
Iriko, or beche de mer	208,000	25,000	Dust	152,000	156,000
Juirickisha	60,000	72,000	Timber, wood and planks	223,000	188,000
Kainohashira	67,000	54,000	Tobacco, leaf	81,000	70,000
Kanteen	329,000	337,000	Umbrellas	53,000	26,000
Lacquered-ware	589,000	630,000	Vegetable wax	382,000	326,000
Mats for floors	148,000	36,000	Wall-paper	63,000	55,000
Matches	741,000	941,000	Wheat	205,000	122,000
Mushrooms	516,000	442,000			

The following is a table of the principal imports into Japan for the year 1888 compared with 1887:

Imports by articles.

Articles.	Value.		Articles.	Value.	
	1888.	1887.		1888.	1887.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
Beans, peas, etc	608,000	425,000	Kerosene oil	3,519,000	1,871,000
Blankets	543,000	581,000	Leather (not sole)	526,000	531,000
Chintzes	389,000	318,000	Locomotives	301,000	95,000
Cotton:			Machinery, spinning	1,109,000	124,000
Raw	1,652,000	711,000	Mousseline de laine	2,364,000	1,126,000
On the seed	569,000	202,000	Satins, silk and cotton		
Yarns	13,611,000	8,235,000	mixture	500,000	437,000
Flannels	549,000	323,000	Shirtings, gray	2,332,000	1,169,000
Iron:			Sugars:		
Bar, etc	749,000	447,000	Brown	2,428,000	2,418,000
Rail	1,462,000	653,000	White	4,424,000	3,296,000
Nails	875,000	393,000	Watches	704,000	368,000
Italian cloths	1,485,000	921,000	Woolen cloths	1,041,000	1,402,000

Specie.—Specie and bullion were exported and imported in 1888, as follows: Exported, 7,833,444 silver yen; imported, 8,732,491; excess of imports, 899,047 silver yen.

Exports to the United States.

Articles.	Value.		Articles.	Value.	
	1888.	1887.		1888.	1887.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
Bamboo-ware	77,000	102,000	Rice	296,000	98,000
Camphor	275,000	387,000	Screens	46,000	46,000
Bronze-ware	37,000	41,000	Silk:		
Coal	36,000	123	Raw	13,740,000	11,165,000
Cocoons		21,000	Noshii	26,000	125
Cocoons pierced	62,000	117,000	Handkerchiefs	831,000	816,000
Fans:			Piece goods	45,000	22,000
Round	23,000	21,000	Straw plaits	213,000	316,000
Other	88,000	76,000	Sulphur	87,000	112,000
Floss silk	106,000	68,000	Tea:		
Laquered-ware	51,000	64,000	Green and black	5,114,000	6,772,000
Mats for floor	32,000	33,000	Dust	121,000	134,000
Porcelain	326,000	295,000	Vegetable wax	39,000	31,000
Rags	316,000	253,000	Wall-paper	12,000	12,000

Imports from the United States.

Articles.	Value.		Articles.	Value.	
	1888.	1887.		1888.	1887.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
Books	79,000	114,000	Leather, other	56,000	79,000
Canvas	116,000	192,000	Locomotives	23,000	.....
Clocks	252,000	160,000	Machinery:		
Condensed milk	91,000	55,000	Paper making	205,000	1,000
Cotton, raw	12,000	1,000	Weaving	16,000	230
Flour	129,000	94,000	Railway carriages	3,000	.....
Kerosene	3,207,000	1,871,000	Steam-engines and boilers	26,000	20,000
Leather, sole	197,000	132,000	Watches	163,000	27,000

Imports and exports of Japan for 10 years.

Years.	Imports.	Exports.	Years.	Imports.	Exports.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
1879	32,953,000	28,175,000	1884	29,672,000	33,871,000
1880	36,626,000	28,395,000	1885	29,356,000	37,146,000
1881	31,191,000	31,058,000	1886	32,168,000	48,876,000
1882	29,446,000	37,721,000	1887	44,304,000	52,407,000
1883	28,444,000	36,268,000	1888	65,455,000	65,705,000

Customs duties for 10 years.

Years.	On exports.	On imports.	Years.	On exports.	On imports.
	Silver yen.	*Silver yen.*		*Silver yen.*	*Silver yen.*
1879	988,935	1,524,364	1884	1,136,682	1,356,876
1880	904,712	1,688,191	1885	1,313,791	1,367,403
1881	984,842	1,473,583	1886	1,481,927	1,556,784
1882	1,262,661	1,387,130	1887	1,562,608	2,116,317
1883	1,324,699	1,342,891	1888	1,995,004	2,725,422

ANALYSIS OF IMPORT TRADE.

United States.—An examination of one of the foregoing tables shows that while imports into Japan from the United States increased in 1888, as compared with the previous year, to the extent of 1,089,217 yen, the increase in the one article of kerosene amounted to more than those figures 1,336,000 yen, while clocks were imported more largely by 92,000 yen; condensed milk, 36,000 yen; flour, 33,000 yen; locomotives, 23,000 yen; paper-making machinery, 204,000 yen; other machinery, 15,000 yen; watches, 136,000 yen; while the other principal articles imported from the United States, such as books, canvas, leather, etc., show a corresponding decrease, making the net increase in imports from the United States as above mentioned, 1,089,217 yen.

Great Britain. — The extraordinary gain in the amount of imports from Great Britain during 1888, which, as seen in one of the foregoing tables, was nearly 10,000,000 yen, was made principally in articles of merchandise which the United States does not send to Japan, such as blankets, printed cottons, cotton drills, cotton satines, cotton velvets, cotton yarns, flannels, gray shirtings, Italian cloths, iron, and spinning machinery. Over 3,000,000 of this increased import from Great Britain was in the one article of cotton yarns, nearly 1,000,000 in iron rails; 500,000 in gray shirtings, and nearly 1,000,000 in spinning machinery.

This last item is one of the most significant facts of the foreign trade of Japan during the year under consideration. The fact that Japan imported spinning machinery in 1888 to the extent of 1,109,000 yen is a significant indication of a serious intention and effort to become independent of foreign manufacturers.

The increase in the number of cotton spinning mills established in Japan in recent years has been very considerable, and may, at some future day, revolutionize that branch of her trade. The day may come when Japan will draw her raw cotton direct from the southern and cotton-producing States of the American Union, and manufacture largely her own yarns and weave her own cloth. Cheaper railway freight-transit from the cotton and wool fields of the United States, or the completion of one or more of the ship-canals across the Isthmus would bring this great traffic, now controlled by Europe, largely in the reach of both Japanese and Chinese manufacturers.

Under such conditions, there is no question that Japan could manufacture her yarns and certain qualities of cotton goods cheaper than they are now sold to her people, to say nothing of the advantage of building up vast manufacturing industries on her own soil. This is one thing, it is respectfully submitted, that European manufacturers especially, will have to contend with in the future.

AMERICAN VS. RUSSIAN KEROSENE.

The most important to American interests in the foreign trade of Japan of 1888, was the introduction of kerosene oil from Russia, the United States having heretofore had a monopoly of that trade in this country. The total value of kerosene imported into Japan in 1888 was 3,519,255 yen, as follows:

	Yen.
From the United States	3,207,693
From Russia	213,854
From Turkey	96,922
From other countries	786

Owing to exceptional high rates of freight from New York, the Russian oil has been sold in several Japanese ports at from 5 to 10 cents per case below the selling price of American oil, which has been necessarily somewhat higher than usual on account of said advance in freight.

The packing of Russian is inferior to the packing of the American oil, and the percentage of leakage very much greater; so much so that owing to

this defect the Russian oil has not found many consumers in the interior. On the first two cargoes the leakage was as high as 4 per cent., and on the third 2.3 per cent., against one-half of 1 per cent. of leakage of the American oil. This, however, is, of course, capable of being remedied, being only a matter of improvement in the cases. The color of the Russian oil is a full water white, and the complaints against its burning qualities have not been of a very serious nature, as the prices realized indicate. There is a more decidedly disagreeable odor to the Russian oil than to the American product, but this will not prove so great a disadvantage to its use in Japan, where the houses are all so open, and especially where the sense of smell of the common people has, for ages, been daily accustomed to more offensive odors in connection with their ancient system of agriculture. There is no doubt that in Japan, as in Europe and India, the competition between Russian and American kerosene oil will be most active.

AMERICAN SHARE IN FUTURE TRADE.

A careful examination of the particulars of Japan's import trade for 1888 confirms us in the opinion heretofore expressed in regard to the future which our American manufacturers will have in supplying that trade. There are a few articles in which we will probably continue to lead, and the trade in these articles will doubtless continue to grow with the growth of the Empire of Japan and the natural increase in the demand of the people for these particular articles. But it is evident that we can not have an equal share in the bulk of Japan's trade until our manufacturers can and will make the articles mostly in demand at the same cost as European manufacturers make and transport them to the ports of the Orient. Should that time come, the American merchants in Japan will be quite alive to supplying the trade here with American manufactured goods.

At present, there being neither sentiment nor patriotism in commerce, American, as well as merchants of other nationalities, sell to the Japanese trade such manufactured goods at the lowest prices as best suit the wants of the people, regardless of the place of manufacture. When it is taken into consideration that the United States imports nearly $30,000,000 annually of cotton goods from Great Britain,* it is not very surprising that we have no

*NOTE BY THE DEPARTMENT.—The total imports of cotton manufactures into the United States from the United Kingdom during the fiscal year 1888 amounted to $10,783,000, viz: Printed cotton cloth, 14,437,000 yards, valued at $1,718,000; embroideries, laces, trimmings, etc., $3,383,000; knit goods, hose, shirts, stockings, etc., $712,000; thread, yarns, etc., $851,000; all other, $4,119,000. It will thus be seen that our imports from the United Kingdom are made up nearly altogether of fancy manufactures—classes of goods which have no relevancy whatever to the Japanese trade in foreign cottons, which is almost wholly composed (yarn excepted) of plain and printed cotton cloths. Not only do we not import this class of goods from the United Kingdom, but we export them thither in comparatively large quantities. In 1888 our exports of cottons to the United Kingdom were: Unbleached cloth, 8,500,000 yards, valued at $706,000; all other cotton goods, $558,000; total, $1,264,000. The exports of cotton manufactures from the United Kingdom to Japan during the calendar year 1887, the latest statistics at hand, were as follows: Yarns, 23,472,500 pounds, valued at $4,039,000; piece goods, plain, 42,620,300 yards, valued at $1,900,000; printed piece goods, 22,783,000 yards, valued at $1,496,000; all other, $90,000. The only phase of the Japanese trade, therefore, which concerns our manufacturers is that of piece goods, plain and printed, the British exports thither amounting to $3,396,000. The British plain piece goods sent to Japan average only about 4½ cents per yard, and the prints about 6¼ cents per yard.

share in supplying the cotton goods trade of Japan, which is far less than that amount; though with the completion of one of the proposed isthmian canals, affording cheaper transportation for our manufactures, we may thereby be enabled to compete to some extent in that trade, unless the supply of raw cotton to Japan at cheap rates, as suggested, changes the present direction and channels of the cotton trade of Japan.

RICHARD B. HUBBARD,
Minister.

LEGATION OF THE UNITED STATES,
Tokio, April 6, 1889.

COMMERCE AND TRADE OF HONDURAS.

REPORT OF CONSUL HERRING, OF TEGUCIGALPA, FOR THE YEARS 1887 AND 1888.

In the recently published biennial reports made by heads of departments to the Congress, which adjourned here on the 10th instant, and which cover a period from July 31, 1886, to July 31, 1888, appears the following information:

AMOUNT AND SOURCES OF GOVERNMENT REVENUE.

Custom-houses	$1,164,629.72
Aguardiente (native rum)	873,127.63
Tobacco	455,629.71
Foreign liquors	44,758.83
Gunpowder	24,540.07
Sealed paper	72,011.59
From sale of lands	50,232.81
Miscellaneous sources	133,334.15
Total	2,818,264.51

The income for the two years preceding amounted to $2,596,936.58, showing an increase in favor of the past two years of $221,327.93.

EXPENDITURES.

Aguardiente*	$258,673.17
Foreign liquors*	4,239.24
Tobacco*	229,617.28
Gunpowder*	12,950.39
Salaries of receivers	8,177.87
Mileage per diem of legislators	26,859.38
Executive department, salaries and general expenses	64,917.11
Government of departments (counties)	121,393.21
Department of foreign relations	31,860.26
Department of justice	96,416.00

*Government monopolies.

Department of war	703,782.66
Department of treasury	188,667.04
Department of public instruction	96,701.99
Department of public works	384,914.37
Payment on public debt	617,341.94
Total	2,826,531.91

Comparing this with the amount of income shows a deficit of $8,267.40, which, we are informed, is covered by the balance of cash on hand at time of last report, and that this deficit was caused by payments on the public debt.

PUBLIC DEBT.

The Government debt is represented to be as follows: Interior debt, $1,499,620.67; foreign debt, $37,000; total, $1,536,620.67.

VALUE OF GOVERNMENT PROPERTY.

The value of national property, real, personal, and transmissable, in vessels or ships, materials of war, telegraph, and post-offices, amounts to $2,355,187.58; value in roads and parks, $580,787.50; value invested in buildings donated to corporations, Government drug stores and hospitals, $216,028.00; office furniture, $56,428.75; monopoly, storehouses, and fixtures, $64,805.69; total, $3,273,237.22.

Included in the above, and situated in Tegucigalpa, are the following Government buildings and their estimated values:

	Value.
National palace	$50,000
Presidential mansion	48,690
Court house	30,000
Mint and Government printing-house	57,530
Penitentiary	30,000
Post-office and telegraph building	28,000
Bath-house in Rio Grande	25,000
General hospital	40,407
Drug store for general hospital	6,000
Market-house, "Los Dolores"	28,000
Central University	57,852
National library	5,440
National archives	15,000
Cuartse San Francisco	30,000
Cuartse Morazan	10,000
National theater	10,000
Parks and public walks	125,000
Total	496,919

The value, class, and amount of Government property in articles of monopoly (that is, whisky, native and foreign gunpowder, tobacco and cigars), on the 31st of July, 1888, and in what departments are shown in the following table:

Balance of articles of Government monopolies on hand on the 31st of July, 1888, and the value.

Offices.	Aguardiente (rum).		Foreign liquors.		Tobacco.	
	Bottles.*	Value.	Bottles.*	Value.	Pounds.	Value.
Tegucigalpa	4,046	$3,034.50	.....	.....	28,635	$17,896.87
El Paraíso	6,830	5,122.50	.....	.....	5,709	3,567.00
Olancho	4,843	3,633.75	161	$282.00	9,066	2,357.16
Yoro	6,060	4,545.00	1,357	1,484.87	8,986	5,616.25
Colón	21,498	16,123.50	.....	.....	9,094	5,683.75
Roatán	1,310	982.50	2,625	2,825.25	427	267.18
Santa Bárbara	7,341	5,505.75	4,592	4,567.87	15,815	7,907.50
Copán	7,802	5,851.87	.....	.....	.....	.....
Gracias	6,044	4,533.37	.....	.....	10,180	2,545.00
Intibucá	2,258	1,694.12	450	455.00	2,488	933.00
Comayagua	5,207	3,905.62	76	76.00	20,055	12,534.37
La Paz	1,288	966.37	.....	.....	2,740	1,712.50
Choluteca	7,659	5,744.25	.....	.....	4,199	2,623.12
Amapala	7,074	5,305.50	19	28.50	426	266.25
Puerte Cortés	434	325.50	571	571.00	49	30.62
Total	89,700	67,274.14	9,841	10,291.38	117,869	63,940.61

Offices.	Cigars.		Powder.	
	Number.	Value.	Pounds.	Value.
Tegucigalpa	425,000	$5,312.50	350	$350.00
El Paraíso	236,042	2,920.88	1,431	1,431.00
Olancho	551,612	6,895.15	906	906.75
Yoro	312,765	3,909.56	1,359	1,359.81
Colón	804,720	12,573.75	3,560	3,560.00
Roatán	74,645	1,166.33	183	183.98
Santa Bárbara	166,270	2,078.37	1,462	1,462.00
Copán	.....	.....	1,689	1,689.25
Gracias	236,624	1,848.62	1,426	1,426.00
Intibucá	104,340	1,191.05	635	636.06
Comayagua	452,200	5,815.00	449	449.50
La Paz	92,975	1,162.50	687	687.37
Choluteca	33,546	419.32	1,066	1,333.93
Amapala	1,720	21.50	189	236.25
Puerto Cortés	70,218	877.72	.....	.....
Total	3,562,677	54,192.27	15,401	15,712.92

* A bottle here is about 3 pints.

RÉSUMÉ OF VALUES.

Aguardiente (rum)	$67,274.14
Foreign liquors	10,291.38
Tobacco	63,940.61
Cigars	54,192.27
Powder	15,712.92
Total	211,411.32

According to the Government showing there exists the Government property enumerated under the head of "value of Government property," viz, $3,273,237.22; amount of monopolies as above, $211,411.32; making a total of $3,484,648.54; the Government debt, $1,536,620.28; leaving a balance of $1,948,028.26. And this without mention of any other resources, as cash on hand, Government lands, privileges, etc.

TELEGRAPH.

The Government owns and controls the telegraph system. The value of the plant is $208,170.58. There are 1,717 miles of telegraph lines in operation, with 68 offices and 252 employés. In the last seven months of the year 1888, the time during which the present incumbent has been the director-general, no anterior record appearing, there were franked by Government officials 46,460 messages, containing 1,391,009 words, the revenue for which, if paid for, would have been $36,927.72. There were sent paid messages to the number of 44,366, containing 495,780 words, for which were paid $13,316.40. The telegraph connects, through the Salvador line, with the cable at La Libertad. The value of the cablegrams sent was $4,734.07. The number of cablegrams sent were 437, and 355 of these were sent to the United States. The total expenses during the seven months were $50,308.46, and of this amount $13,778.40 was for salaries. The secretary or minister of the treasury department reports that the expenses of the telegraph system, as also that of the post-office, are always more than the income.

GOVERNMENT INCOME FOR NINE YEARS.

The income of the Government, for each year of the nine years next preceding and including the first six months of the year 1888, was as follows:

Years.	From custom-house.	From other sources.	Total for each year.
1879-'80	$393,698.61	$552,563.56	$946,262.17
1880-'81	486,376.58	633,799.34	1,120,175.92
1881-'82	593,302.83	705,575.91	1,298,878.74
1882-'83	609,685.74	778,517.35	1,388,203.09
1883-'84	586,734.51	720,623.04	1,307,357.55
1884-'85	499,892.69	758,578.94	1,258,471.63
1885-'86	585,609.77	752,855.18	1,338,464.95
1886-'87	587,092.44	781,899.31	1,368,991.75
1887-'88	577,537.28	871,735.48	1,449,272.76
Total	4,919,934.45	6,556,144.11	11,476,078.56

The reason the second column is headed to show "income from custom-houses" instead of simply from customs, is because in the *renta aduanera*, or custom-house income, of this Government there are other items than what are strictly customs or duties on imports and exports, but which really come or are collected through the custom-houses. Under the head of income from other sources are included (besides those before mentioned) donations to Gov-

ernment charitable institutions, fines, commutations, military exemptions, forced loans, sales of Government lands, incomes from national buildings, as the mint, universities, hospitals, etc., license to lawyers and doctors, literary titles, and taxes on slaughtering of cattle, cutting of timber from Government lands, etc., but, strange as it may seem, no tax on real or personal estate.

IMPORTS.

The imports, with the class of articles, number of pounds, and duty paid, are shown in the table following:

Imports into Honduras, 1887–'88.

FIRST CLASS—FREE OF DUTY.

Articles.	Quantities.	Articles.	Quantities.
	Pounds.		*Pounds.*
Rice	242,258	Samples	2,239
Garlic	2,821	Machinery	64,170
Fence wire	38,316	Corn	103,764
Oats	1,356	Apples	4,317
Empty barrels	1,316	Marmor	439
Pumps	1,310	Potatoes	66,895
Onions	30,247	Pears	208
Carts and coaches	10,263	Stone tanks	830
Piping	4,003	Empty sacks	19,671
Lime	53,224	Common salt	435,505
Coal	2,005	Seeds	17
Terrestrial spheres	61	Zinc tiles	70,233
Beans	49,794	Stone jars	140
Empty demijohns	4,618	Fresh grapes	554
Flour	2,396,149	Vegetables	742
Printing machines	410	Total	3,618,211
Printed books	9,869		
Yeast-powder	107		

SECOND CLASS.

[Duty 2 cents per pound.]

Linseed oil	6,618	Chromos	24
Turpentine	4,833	Beer	427,936
Articles of glass	222	Chalk in powder	23
Castor oil	19,021	Sieves	123
Tar	6,789	Glass-ware	36,576
Sugar	228,968	Salt beef	33,345
Olive oil	26,873	Coffee	22,987
Mineral water	4,571	Iron boilers	10,083
Starch	1,077	Barley	1,234
Sulphuric acid	3,306	Rattles	3,060
Cod-liver oil	4,855	Pen-holders	24
Resinous oil	1,061	Cacao	6,308
Steel	7,938	Black wax	21
Almond oil	4,137	Bedsteads	5,106
Cotton (raw)	105	Copper sheet	3,055
Hemp-seed	306	Raw tallow	233
Resin	514	Heavy paper (cartoon)	160
Cod-fish	19,002	Glue	172
Broaches	36	Carbonate of soda	60
Borax	60	Dynamite	6,190
Advertising pictures	1,017	Brooms	2,463
Iron nails	80,394	Sheets of zinc	81

Imports into Honduras, 1887–'88—Continued.

SECOND CLASS—Continued.

Articles.	Quantities.	Articles.	Quantities.
	Pounds.		*Pounds.*
Inferior fiber	712	Plow points	297,130
Scott's emulsion	2,611	Copying-presses	318
Glass bottles	16,066	Paint	514
Stone figures	252	Hogs' meat	18,631
Crackers	75,593	Hats	81,392
Ginger	15,571	Salt fish	1,465
Peas	425	Potash	2,068
Sheets of tin	5,074	Steel pens	149
Manufactured iron	68,099	Lead	207
Lasts	860	Mats	10,381
Axes	16,692	Earthen jugs	357
Common soap	235,227	Scales	55
Books in blank	3,365	Oars	1,653
Ordinary porcelain-ware	171,160	Resin	1,272
Sealing-wax	162	Epsom salts	775
Linseed	596	Envelopes	11,777
Hops	430	Sago	7,269
Furniture	13	India-rubber stamps	529
Seed planter	74,259	Leather	76
Ropes of all kinds	237	Bacon	515
Common machetes (brush hooks)	11,542	Writing-ink	17,521
Maizena	21,277	Iron tacks	7,369
Mackerels	13,146	Iron screws	1,298
Axe-handles	3,755	Writing utensils	1,382
Grinding-stones	1,292	Wines	619,953
Electric-machines	1,923	Vinegar	9,434
Manilla	73	Chemicals for preserving hides	906
Sewing-machines	1,121	Glasses and glass-ware	23,143
Smoothing-irons	35,065	Total	2,903,138
Shovels	12,730		
Kerosene oil	13,740		

THIRD CLASS.

[Duty 4 cents per pound.]

Fish-hooks	325	Capsules for bottles	29
Olives	9,920	Mattresses	2,711
Iron rings	15	Thimbles	331
Alucema	245	Pickles	25,969
Zinc wire	34	Porcelain figures	240
Indigo	26	Macaroni	12,254
Almonds	435	Iron-ware	39,967
Copper wire	32	Crystallized fruit	273
Pails	2,970	Tin-plates	5,082
Baths	432	Jams	7,767
Empty trunks	19,807	Junco	5
Varnish	841	Lamps	11,508
Baskets	962	Raw wool	154
Glass candlesticks	660	Files	126
Iron locks	411	Shuttles	18
Confectionery	31,435	Vegetables	1,550
Padlock	1,137	Fine crockery	275
Tin spoons	390	Butter	26,553
Saddle cloth	211	Lard	54,788
Copper nails	1,618	Mustard	1,105
Copper candlesticks	53	Ammunition	2,789

Imports into Honduras, 1887-'88—Continued.

THIRD CLASS—Continued.

Articles.	Quantities.	Articles.	Quantities.
	Pounds.		*Pounds.*
Levels	106	Cheese	10,915
Nuts	389	Sauce	1,322
Paint	2,103	Sardines	28,509
Wrapping-paper	13,152	Quinine	178
Writing-paper	49,588	Chalk	34
Cigarette-paper	20,765	Utensils for lamps	378
Lead	2,768	Copper utensils	112
Spelter	166	Candles	39,427
Bronce	55	Bolts and hinges	567
Shovels	185	Total	476,356
Pianos	7,844		
Perfumes	113		

FOURTH CLASS.

[Duty 8 cents per pound.]

Acids	627	Refined sulphur	268
Bitters	1,903	Matches	37,992
Scented waters	28,167	Manufactured rubber	40
Alum	146	Sirups	3,105
Anise	690	Canvas and duck	60,875
Sulphur	908	Condensed milk	8,343
Crystallized candies	4	Canned sausage	137
Analines	15	Printed music	99
Blacking	2,358	Sweet niter	10
Sacking	1,973	Paper	66
Billiards	3,135	Pepper	4,225
Bees-wax	2,116	Pipes	2,920
Cloves	265	Raisins	17,384
Carts	108	Sand-paper	207
Cumin seed	5,720	Blue-stone	12
Pasteboard boxes	2,130	Portraits	376
Cinnamon	2,974	Soda	1,484
Preserved provisions	33,523	Sulphate of iron	70
Common knives	1,897	Sausages	215
Cherry cordial	20	Sulphate of copper	31
Powdered cubebs	6	Bottle corks	1,029
Champagne	4,728	Wire cloth	190
Chocolate	2,434	Corkscrews	7
Glass fruit dishes	30	Rugs	72
Mirrors	9,018	Vermouth	14,994
Oil-cloth	1,649	Total	260,692
Images and plates	5		
Blank labels	63		

FIFTH CLASS.

[Duty 12 cents per pound.]

Accordeons	3,904	Electric pins	3
Cotton-seed oil	572	Calf leather	1,047
Pins and hooks	1,199	Brushes	397
Rose oil	960	Hemp canvas	288
Needles	715	Cotton threads	415
Razor strops	9	Dumb waiters	35

Imports into Honduras, 1887–'88—Continued.

FIFTH CLASS—Continued.

Articles.	Quantities.	Articles.	Quantities.
	Pounds.		*Pounds.*
Bed ticking	5,085	White cotton	457,197
Chinese fire-works	2,299	Madapolam	45,774
Cotton ribbons	710	Lamp wicks	118
Quilts	5,244	Table cloth and napkins	92
Fishing-nets	100	Mana (ash gum)	20
Glass beads	10	Playing-cards	829
Patent leather	44	Cotton cloth (olán)	10,603
Cotton drills	87,929	Hooks	233
Mouth harmonicas	1,183	Perfumery	36,654
Long cloth	27,670	Tanned leather	6,352
Elastics	645	Cotton umbrellas	7,653
Gypsum figures	43	Wall-paper	1,475
Cotton blankets	3,594	Dusters (feather)	10
Gelatine	51	Cotton satin	3,516
Gum arabic	571	Cotton parasols	959
Cotton cloth	46,603	Syphons	496
Cotton thread	33,194	Satin	5,686
Musical instruments	3,707	Towels	5,694
Surgical instruments	19	Tea	1,905
Toys	7,766	Theodolites	84
Perfumed soap	2,107	Total	823,614
Bird cages	169		
Liquor stands	67		

SIXTH CLASS.

[Duty 18 cents per pound.]

Glass beads	3,293	Cotton gloves	1
Photographic apparatus	168	French prints	1,672
Buttons	2,124	Lotteries	115
Bandana	778	Machetes and knives	2,732
Brilliantina	1,252	Fine glass pearls	45
Walking canes	165	Razors	1,006
Cotton undershirts	8,617	Nutmegs	152
Pen-knives	1,267	Lamp shades	240
Linen cloth	677	Overalls	40
Cotton material	212	Painting brushes	1
Cotton drawers	472	Rosaries	122
Glass beads (cuentas de vidrio)	22	Sandle-cloth	1,937
Drills	6,217	Scissors	1,093
Dies	11	Forks	669
Cotton socks and stockings	10,214	"Tela real"	1,037
Spatules	29	Wax candles	437
Riding whips	187	Cotton prints	110,820
Fire-works	642	Total	142,272
Electric bands	2		
Syringes	351		

Imports into Honduras, 1887–'88—Continued.

SEVENTH CLASS.

[Duty 24 cents per pound.]

Articles.	Quantities.	Articles.	Quantities.
	Pounds.		*Pounds.*
Articles of luxury	83	Cheap jewelry	2,432
Carbolic acid	267	Muslin	1,486
Adornments and cotton fringes	99	Stencil plates	130
Whalebones	38	Metal lamps	10
Cotton shirts	12,782	Medicines	37,377
Celluloid collars and cuffs	12	Thread in skeins	439
Bishop lane	8,085	Sunks	1,687
Drill shirts	3,362	Necessaries	94
Oil-cloth	1,752	Silk umbrellas	941
India-rubber overshoes	168	Combs	2,233
Ladies' sewing cases	7	Cotton handkerchiefs	14,626
Leaden crosses	18	Velvet	13,886
Velvet ribbons	168	Artificial-flower paper	569
Plated spoons	4	Percale (white muslin)	2,908
India-rubber neckties	2	Papelillo (paper cigarettes)	108
Cotton cords	25	Ready-made clothing	2,068
Cotton laces	8,963	Mantle clocks	984
Essence coronada	542	Gentlemen's hats	10,517
Yarn	563	Ladies' hats	328
Small combs	1	Thermometers	10
Meat extracts	125	Cotton braids	635
Woolen blankets	19,521	Sarsaparilla (bottled)	189
Velvet bonnets	125	Total	161,906
Glazed muslin	11,367		
Colored threads	170		

EIGHTH CLASS.

[Duty 30 cents per pound.]

Albums	118	Woolen caps	41
Carpets	183	Carpet cloth	263
Saffron	8	Saddle cloth	387
Braid	370	Woolen thread	462
Pearl buttons	416	Bunting	577
Woolen sashes	4	Saddle undercloth	491
Linen shirts	892	Muslin	2,211
Boots and shoes	23,082	Cotton shawls	10,759
Linen cuffs and collars	317	Purses	705
Woolen braids	78	Cotton embroidery	758
Cotton table covers	90	Gentlemen's ready-made clothing	3,542
Woolen drawers	32	Labels	37
Cigarette cases	40	Woolen edgings	704
Woolen laces	20	Fancy cards	218
Patent cigar lighters	13	Total	47,065
Labels for bottles	230		
Woolen fringes	17		

Imports into Honduras, 1887–'88—Continued.

NINTH CLASS.

[Duty 50 cents per pound.]

Articles.	Quantities.	Articles.	Quantities.
	Pounds.		*Pounds.*
Alpaca	539	Spangles	517
Fans	76	Garters	318
Military trappings	31	Blue mass	28
Corsets and belts	905	Merino	1,896
Cashmere	7,781	Cloth	1,306
Casinet	187	Revolvers	1,324
Guitar strings	254	Saddles	963
Cartridges and caps	1,335	Suspenders	144
Halters and bridles	267	Tobacco	465
Leather straps	430	Dress for ladies	232
Woolen shirts	361	Dress for boys	52
Damask	159	Scabbards	76
Spectacles	153	Sheep-skins	282
Sponges	20	Total	22,712
Guns	1,715		
Flannel	890		

TENTH CLASS.

[Duty 80 cents per pound.]

Woolen comforters	159	Ornaments	112
Cotton cravats	295	Woolen shawls	2,905
Woolen undershirts	473	Linen handkerchiefs	180
Woolen table-cloth	20	Imitation wool handkerchiefs	19
Cigarettes	55	Silk satin	132
Artificial flowers	330	High hats	8
Curtains	75	Total	4,768
Riding gloves	5		

ELEVENTH CLASS.

[Duty $1.50 per pound.]

Billiard balls	21	"Olán"	62
Silk cravats	36	Silk shawls	5,682
Silk ribbon	450	Silk handkerchiefs	348
Silk undershirts	53	Silk material	2,024
Muslin caps	298	Panama hats	183
Kid gloves	92	Velvet	54
Fine jewelry	59	Total	9,640
"Lustring"	278		

LIQUORS.

[Duty 16 cents per pound.]		[Duty 28 cents per pound.]	
Absinthe	2,783	Alcohol	1,038
Brandy	52,071	Aguardiente	3,815
Cordial	182	Aniseed	8,227
Rum	184	Cognac	1,728
Total	55,220	Gin	4,477
		Maraschino	47
		Whisky	8,381
		Total	27,713

Unfortunately, there is no record to show from whence these imports came, except the table following, which shows the articles and number of pounds imported through the port of Amapala, from Salvador, Guatemala, and Nicaragua, on which imports no duties were charged, in compliance with a regulation exempting from duties all interchange of commodities between the Central American Republics:

Articles.	Salvador.	Guatemala.	Nicaragua.
	Pounds.	*Pounds.*	*Pounds.*
Sugar	321,419	987,843	.....
Rice	618,727	.....	.....
Coffee	17,500	155,500	.....
Silk shawls	175	.....	.....
Beans	185,897	.....	.....
Corn	190,310	.....	.....
Cigars	4,200	.....	.....
Cotton shawls	825	.....	.....
Shoes	.....	1,825	14,510
Cocoa	.....	18,200	.....
Woolen stubs	.....	150,815	.....
Hammocks	.....	.....	9,280
Horse-trappings	.....	.....	19,300
Total	1,339,053	1,314,283	43,090

The omission to show the countries from whence all the imports come is, of course, a grave defect, but Mr. Munoz, the present efficient director-general, informs me that he hopes to be able to supply the omission before the end of this year. Besides the articles in the foregoing tables there were imported into Honduras 3,375,576 pounds of merchandise free of duty, by concessions; the whole number of pounds imported being 14,737,452.

EXPORTS.

A very complete table of exports is shown in the statement at the end of this report. This shows that nearly five times as much is exported to the United States as to all other nations put together. The fact is not shown, but it appears elsewhere in the records, and is worthy of remark, that of the 62,015½ pounds of silver bullion shipped to the United States 60,675½ were shipped by the Rosario Mining Company alone. This amount was valued in the custom-house here at $1,516,887.50, but this is in the money of this country and notwithstanding it is most likely an overvaluation. The customs officers here have no way of ascertaining the exact value of bullion passing through their offices. There is no export duty or Government charge. It would doubtless be nearer the true value in United States money to deduct as much as 40, and possibly 50, per cent. from the foregoing figures, or say, to put the valuation in United States money, between $700,000 and $800,000.

TRANSPORTATION.

For the benefit of such as may contemplate building railroads or running cart, pack, or other kinds of freight trains, the following table is sent, showing the number of packages and pounds carried and miles actually traveled from the port of Amapala to various towns in this consular district. The freight crosses the bay from Amapala to Pedregal, Aceituno, and Labrea, the distance to either point being about 30 miles from the island of Tegri, on which is Amapala, and then as follows:

Destination.	Packages.	Pounds.	Miles.
From Labrea to—			
Tegucigalpa	13,225	1,655,617	96
Yuscarán	1,327	2,238	144
Cedros	363	31,732	144
Valle de Angeles	253	34,420	117
Danlí	147	18,506	118
Cantarranas	48	6,377	132
Minas de Santa Lucía	597	57,009	105
Minas de la Guadalupe	154	16,000	123
Pespire	280	31,914	24
Nacaome	14	3,275	12
Total	16,408	2,017,080	.....
From Amapala to Aceituno	124	5,656	36
From Aceituno to—			
Caridad	61	4,744	60
Santa Rosa	79	11,850	201
La Alianza	123	8,537	12
Goascorán	628	50,845	15
Aramecina	403	20,559	30
Curarén	61	3,777	42
Langue	466	30,868	12
Comayagua	1,191	130,556	129
La Paz	412	30,249	114
Gracias	105	8,761	165
Erandique	2	250	141
El Cuyal	14	3,863	6
La Esperanza	369	34,794	111
Total	4,038	345,309	.....
From Pedregal to—			
Choluteca	1,798	206,132	4½
San Marcos	213	15,066	40
El Corpus	183	16,152	22
Orocuina	294	31,135	22
Apacilagua	40	3,885	22
Texiguat	5	310	40
Marcovia	29	3,389	9
Total	2,562	276,069	.....

The packages and pounds in this table are taken from official sources, but the number of miles, being not so obtainable, were taken from unofficial sources. Another port or landing, and one very important for the entry of goods on the mainland from Amapala (the only port of registration), is San Lorenzo. But there is no Government officer kept at this port, it being principally for the benefit of the Rosario Mining Company, and therefore

there is no official report of the Government of the freight entering there. It is the place at which is landed the largest amount, by far, of the mining freight, and although it is known that this kind of freight is of the very heaviest, yet there is no import duty on it and the number of pounds is not ascertained. The number of packages, however, for mining companies entered at Amapala is 23,953, and of this 12,667, or more than one-half, are for the Rosario Company's mine, and are freighted to the mine at Sanguancito, a distance of about 111 miles. It is doubtless safe to assume that at least half as much freight is entered at San Lorenzo as at all three of the afore-named landing places.

BANKS.

The only commercial advancement worthy of special mention is the establishment of two banks in the city of Tegucigalpa — one, the Banco Centro-Americano, in December, and the other, the Banco Nacional Honduraneo, in January last. These are the first ventures in the banking business in this city, and these two banks are the only ones in this Republic. They have not yet completed arrangements for exchange with banking houses in the United States, but expect to do so soon.

D. W. HERRING,
Consul.

UNITED STATES CONSULATE,
Tegucigalpa, March 21, 1889.

Exports from Honduras during the fiscal year 1888.

[Values in peso dollars; 1 peso = 69.9 cents American.]

Articles exported.	Unit.	Ports of export.	Destination.	Quantity.	Value.
Indigo	Pounds	Amapala	United States	4,785	$4,785.00
		Puerto Cortés	do	864	864.00
		Amapala	England	59,913	59,913.00
		do	France	13,083	13,083.00
Aguacates	Barrels	Puerto Cortés	United States	20	80.00
		Trujillo	do	18	72.00
		Roatán	do	42	168.00
Ore	Pounds	Amapala	do	126,188	11,343.82
		Puerto Cortés	do	2,100	210.00
Bananas	Bunches	do	do	780,490	390,245.00
		Trujillo	do	732,044	366,022.00
		Roatán	do	220,894	110,447.00
Coffee	Pounds	Amapala	do	9,870	1,595.60
		Puerto Cortés	do	10,695	2,139.00
		Trujillo	do	7,848	1,569.60
		Amapala	England	22,500	3,792.00
		do	France	41,500	6,950.50
		do	Germany	1,528	275.00
Corozos		Puerto Cortés	United States	1,845	18.45
Cocoa-nuts	Thousands	do	do	1,536,312	31,726.24
		Trujillo	do	1,542,559	34,707.58
		Roatán	do	2,668,244	43,797.56
Sea-shells	Dozens	do	Guatemala	150	75.00

Exports from Honduras during the fiscal year 1888—Continued.

Articles exported.	Unit.	Ports of export.	Destination.	Quantity.	Value.
Cattle	Heads	Trujillo	Belize	1,294	$19,410.00
		Puerto Cortés	do	144	2,160.00
		Yoro	do	148	1,480.00
		Tegucigalpa	Guatemala	2,354	32,956.00
		Santa Bárbara	do	744	8,928.00
		Comayagua	do	2,109	21,090.00
		La Paz	do	189	1,890.00
		Copán	do	1,411	18,343.00
		Gracias	do	1,220	14,640.00
		Choluteca	do	197	1,970.00
		El Paraíso	do	3,009	33,099.00
		Intibucá	do	1,631	19,572.00
		Olancho	do	5,844	52,596.00
		Santa Bárbara		18	216.00
		Comayagua	San Salvador	91	910.00
		Choluteca	do	1,690	16,900.00
		Intibucá	do	249	2,988.00
		Nacaome	do	54	540.00
		Choluteca	do	1,568	15,680.00
Mules	do	Trujillo	Nicaragua	24	1,200.00
		Puerto Cortés	Belize	108	5,400.00
		Choluteca	do	192	9,600.00
		do	San Salvador	36	1,800.00
Horses	do	Trujillo	Nicaragua	3	90.00
		Puerto Cortés	Belize	10	320.00
		Yoro	do	3	90.00
Donkeys	do	La Paz	San Salvador	2	50.00
Goma de lana	Pounds	Trujillo	United States	7,897	1,263.52
India rubber	do	Amapala	do	335	121.50
		Puerto Cortés	do	50,522	10,104.40
		Trujillo	do	86,935	48,682.60
		Amapala	Germany	79	19.95
Lemons	Barrels	Puerto Cortés	United States	12	36.00
		Trujillo	do	9	27.00
		Roatán	do	102	256.00
Woods:					
Mahogany	Feet	Puerto Cortés	do	190,602	11,436.12
Cedar	do	Trujillo	do	420,936	21,046.80
Mulberry	Tons	Choluteca	Nicaragua	1,194	5,470.00
Mangoes	Barrels	Puerto Cortés	United States	30	150.00
		Trujillo	do	57	178.12
		Roatán	do	69	414.00
Oranges	do	Puerto Cortés	do	204	612.00
		Trujillo	do	292	876.00
		Roatán	do	112	336.00
Oysters	Pounds	Amapala	Nicaragua	1,810	362.00
Gold bullion	Ounces	do	United States	272	5,440.00
		do	England	671	13,420.00
		Puerto Cortés	France	100	60,000.00
Coined gold	Dollars	Amapala	United States		850.00
Silver bullion	Pounds	do	do	62,015½	1,550,373.50
		Puerto Cortés	do	289	5,780.00
		Amapala	England	2,051	25,761.00
		do	France	56	1,121.00
Coined silver	Dollars	do	United States		5,617.00
		Puerto Cortés	do		3,500.00
		Amapala	England		2,090.00
		do	France		412.00
		do	Germany		2,230.00
		do	Colombia		4,965.00
		do	Ecuador		329.50
		do	San Salvador		58,860.40

Exports from Honduras during the fiscal year 1888—Continued.

Articles exported.	Unit.	Ports of export.	Destination.	Quantity.	Value.
Hides	Pounds	Amapala	United States	166,500	$23,309.98
		Puerto Cortés	do	59,958	7,435.85
		Trujillo	do	271,077	24,396.93
		Roatán	do	7,300	912.50
		Amapala	Germany	14,871	1,900.64
Deer hides	do	do	United States	11,543	4,617.55
		Puerto Cortés	do	15,380	3,845.00
		Trujillo	do	34,023	12,758.62
		Amapala	Germany	4,631	1,579.39
Goat hides	do	Trujillo	United States	363	88.06
Stuffed birds	Boxes	Puerto Cortés	do	160	1,920.00
Plantains	Thousands	Trujillo	do	151,760	1,327.86
		Puerto Cortés	do	143,513	1,086.35
		Roatán	do	299,000	2,377.50
Pine-apples	do	Trujillo	do	12,917	775.02
		Puerto Cortés	do	11,632	697.92
		Roatán	do	16,740	1,044.40
Cheese	Pounds	Amapala	San Salvador	1,300	260.00
Hats	Dozens	Puerto Cortés	Belize	65	195.00
Leaf tobacco	Pounds	Gracias	Nicaragua	1,600	800.00
		Copán	Guatemala	13,550	2,943.75
		do	San Salvador	7,600	950.00
Cigars	Thousands	Gracias	Nicaragua	105,200	315.60
		Copán	Guatemala	2,547,450	7,642.35
		do	San Salvador	371,000	1,113.00
Sarsaparilla	Pounds	Puerto Cortés	United States	39,874	6,379.84
		Trujillo	do	87,917	29,791.04
		Puerto Cortés	England	700	112.00
Vanilla	do	do	United States	1,500	750.00
Total exports					3,350,664.91

RÉSUMÉ—CLASSIFIED EXPORTS.

Natural products.	Quantity.	Value.
Vegetables:		
Indigo, pounds	78,645	$78,645.00
Aguacates, barrels	80	320.00
Bananas, bunches	1,733,428	866,714.00
Coffee, pounds	93,941	16,321.70
Corozos	1,845	18.45
Cocoa-nuts, thousands	5,747,115	110,231.38
Cactus-gum, pounds	7,897	1,263.52
India-rubber, do	137,871	58,928.45
Lemons, barrels	123	319.00
Woods:		
Cedar, feet	611,538	32,482.92
Mulberry, tons	1,194	5,470.00
Mangoes, barrels	156	742.12
Oranges, do	608	1,824.00
Plantains, thousands	594,273	4,791.71
Pine-apples, do	41,289	2,517.34
Leaf tobacco, pounds	22,750	4,093.75
Vanilla, do	1,500	750.00
Sarsaparilla, do	128,491	36,282.88
Total		1,221,716.22

Exports from Honduras during the fiscal year 1888—Continued.

RÉSUMÉ—CLASSIFIED EXPORTS—Continued.

Natural products.		Quantity.	Value.
Animals:			
Cattle	heads	23,964	265,368.00
Mules	do	360	18,000.00
Horses	do	16	500.00
Donkeys	do	2	50.00
Hides	pounds	519,706	57,955.90
Deer hides	do	65,577	22,800.56
Goat hides	do	363	88.06
Stuffed birds	boxes	160	1,920.00
Cheese	pounds	1,300	260.00
Sea-shells	dozens	150	75.00
Oysters	pounds	1,810	362.00
Total			367,379.52
Minerals:			
Ore	pounds	128,288	11,553.82
Bullion	ounces	943	18,860.00
Gold bars	kilos	100	60,000.00
Silver bars	pounds	64,411½	1,583,035.50
Total			1,673,449.32
Gold and silver:			
Coined gold			850.00
Coined silver			78,003.90
Total			78,853.90
Manufactures:			
Cigars	thousands	3,032,650	9,070.95
Woolen hats	dozens	65	195.00
Total			9,265.95

Exports by ports and countries.

Ports.	Countries.	Value.
Amapala	United States	$1,608,053.95
	England	104,976.00
	France	21,566.50
	Germany	6,004.98
	Colombia	4,965.00
	Ecuador	329.50
	San Salvador	59,120.40
	Nicaragua	362.00
	Total	1,805,378.33
Puerto Cortés	United States	479,016.17
	Belize	8,075.00
	England	112.00
	France	60,000.00
	Total	547,203.17
Trujillo	United States	543,582.75
	Belize	20,700.00
	Total	564,282.75

Exports by ports and countries—Continued.

Ports.	Countries.	Value.
Roatán	United States	159,752.96
	Guatemala	75.00
	Total	159,827.96
Tegucigalpa	Guatemala	32,956.00
Santa Bárbara	Guatemala	8,928.00
	San Salvador	216.00
	Total	9,144.00
Comayagua	Guatemala	21,090.00
	San Salvador	910.00
	Total	22,000.00
La Paz	Guatemala	1,890.00
	San Salvador	50.00
	Total	1,940.00
Copán	Guatemala	28,929.10
	San Salvador	2,063.00
	Total	30,992.10
Gracias	Guatemala	14,640.00
	Nicaragua	315.60
	Total	15,155.60
Choluteca	Guatemala	1,970.00
	Nicaragua	22,950.00
	San Salvador	26,500.00
	Total	51,420.00
Intibucá	Guatemala	19,572.00
	San Salvador	2,988.00
	Total	22,560.00
El Parnaiso	Guatemala	33,099.00
Yoro	Belize	1,570.00
Olancho	Guatemala	52,596.00
Nacaome	San Salvador	540.00
	Grand total	3,350,664.91

RÉSUMÉ OF EXPORTS BY COUNTRIES.

United States	$2,790,405.83
England	105,088.00
France	81,566.50
Germany	6,004.98
Belize	30,345.00
Colombia	4,965.00
Ecuador	329 50
Guatemala	215,745.00
San Salvador	92,387.40
Nicaragua	23,827.60
Total	3,350,664.91

THE LABOR QUESTION IN YUCATAN.

REPORT OF CONSUL THOMPSON, OF MERIDA.

SERVITUDE AND THE HACIENDAS.

In 1542 Yucatan was practically conquered by the Spaniards, and the aboriginal inhabitants—the degenerate descendants of the once civilized Maya nation—were portioned among their conquerors, at one time as slaves, at another time as servants, servitude having a pleasanter sound, even in those early days, than the ugly word "slavery." The country was at the same time divided into immense estates or holdings, called haciendas, each with its pueblos of slaves, or servants, bound by law or contract to do the bidding and work of the owner, or haciendado. The supreme authorities, governing all the Spanish colonies at that time, sought to protect the native and conquered portions of their subjects and endeavored to make their authority felt more in the manner of a paternal guidance than the despotic will of a conqueror. In Mexico an official was appointed from each district to be the defender of the Indians. His duty was to see that their rights were respected; and, from some ancient documents now in my possession, it would appear that some of these officials tried to do their duty. They had to fight against an enemy powerful even in those days, and the spirit of cupidity was often more powerful to impose upon the native than the defender of the Indian was able to protect him. Time passed, and the burdens began to bear heavily upon the serving class.

UPRISINGS.

The Mayas had been among the most indomitable of the native races who sought to bar the progress of the conquerors in Mexico, and they were now almost as difficult to keep conquered as they had been to conquer. Uprisings against their masters in particular and the Spanish rule in general were frequent. Sometimes whole villages would revolt and take to the wilderness, joining their wilder brethren, who, in the unexplored lands, had escaped the clutches of the conquerors, thus leaving a hacienda almost depopulated. At last the crisis came. Owing to various oppressions there was a general uprising in the native pueblos of southern and eastern Yucatan. The Spaniards who had the misfortune to dwell in these villages were either killed and their families carried into perpetual captivity or compelled to join the rebels. Terrible scenes of bloodshed were enacted at this time, the horrors of which can be realized by those who have passed through the terrors of an Indian war. Whole villages revolted, whole villages were depopulated, and the people killed or enslaved. In my explorations in the interior of Yucatan I have come upon the ruined sites of Spanish towns, the very names of which have been obliterated. Only the deep village well and the huge ruined walls of the cross-crowned church remained to prove that they had once existed.

This revolution commenced in the year 1847, and the end is not yet. The rebels and their allies, who are always independent, have their cities and strongholds in the fastnesses of the immense forests between Yucatan, Honduras, and Guatemala, from whence they suddenly emerge to plunder and kill the inhabitants of some unfortunate frontier town. Not a year passes that news of invasions or rumors of invasions of these dreaded *sublivados* do not cause panic upon the frontier of Yucatan and anxiety at Merida, the capital.

DECREASE IN POPULATION.

Before this revolt Yucatan had, according to the data that I have been able to obtain, a population of over 600,000 souls. To-day, according to the official census, Yucatan has a population of 283,000, a direct loss of over 300,000 within fifty years. This is a startling fact, and a terrible one. It explains clearly and decisively the reason of the present and past scarcity of labor in Yucatan. The very nature of the fact indicates that a large percentage of this loss in population was taken from the brawn and muscle of the land; and Yucatan, of all states now in the Mexican union, was the one least able to sustain such a drain. The coast lines are arid and sterile for the most part, and direct hard labor is required to make them productive.

SCARCITY OF LABOR.

The rich lands and forests of precious woods of Yucatan are far within the interior; there are no rivers to bring their products to the sea, and the railroads have not yet reached them. They are, therefore, for the present valueless, and Yucatan's prosperity depends upon sterile coast lands and the adjacent rocky belts. Fortunately these unpromising strips of land have not yet failed her; on the contrary, they have proved to be perfect mines of prosperity by reason of the hennequin plant, which flourishes best upon their rocky surfaces. From this plant (*Agave sisalensis*) is produced the fiber called hennequin, or sisal grass, from which the twine used to bind the sheaves of our great wheat belt is produced. So long as hennequin fiber was in moderate demand at 4 cents per pound the lack of labor was only passively felt as an inconvenience; but when the price of hennequin fiber rose successively 100, 150, and 200 per cent., with a supply that fell short of the demand, then it was that the lack of labor grew into a public calamity. The sins of the past generations were being visited upon the heads of the present generation. Labor to produce the fiber must be had, and the price of labor rose accordingly, and is still rising. Four years ago I had a man to do a day's labor upon a clogged drain, and at the close of the day I paid him 36 cents, the customary price of a day's labor at that time; to-day I hired a man to do similar work, involving the same amount of time, and the price paid was $1.50, the prevailing price to-day. This illustrates the general rise in all things, in provisions and the general cost of living, as well as in the value of labor. Even when the hennequin leaves are cut and the clean fiber dried, bleached, pressed into bales, and delivered by the railroad

into the sea-port of Progreso, the lack of labor is still felt as an active evil. At Progreso steamers are lying in the roadstead awaiting laborers and lighters to unload them, and some have been thus waiting for weeks. The wharves are piled and overloaded with cargoes, incoming and outgoing, perishable and otherwise, but all awaiting the slow process of transportation by means of insufficient labor. The railroad stations and the storehouses are not only filled with hennequin bales, but the streets in front are blocked with piles of bales awaiting exportation. These are more or less exposed to the elements, and a hennequin bale wet means, practically, a hennequin bale ruined.

STRIKES AND IMPORTED LABOR.

Added to this dubious state of affairs, there is at present a strike in progress among the laborers of Progreso. The hennequin growers of Yucatan are making enormous sums, and the laborer at Progreso thinks that he should have a share of the general prosperity. Accordingly, he asks a price for his day's labor that the merchant and shipper deem exorbitant and decline to pay, whereupon the native laborer, with great apparent and, I think, real satisfaction, declares that it suits him just as well not to work, and seeks the shady side of a sand bank for a siesta. And thus matters go on. The native laborer works just enough to keep him in food and tobacco and dozes the rest of the day away. The captains of the delayed vessels rave over time lost; the merchants have their rest broken by nightmares, in which spoiled merchandise and demurrage play conspicuous parts. Thus far it seems the native laborer has the best of it; he has but to lay back and wait. The merchant fears to give in lest it may lead to similar demands in the future, but unless imported labor comes in no recourse other than compliance with the laborers' demands seems to be possible. In years past imported labor has proved a failure. Negroes from Cuba and Jamaica and natives of the Canary Islands have been tried and found wanting. It would seem as though nature had intended Yucatan for the indigenous race, and for that race only.

EDWARD H. THOMPSON,
Consul.

UNITED STATES CONSULATE,
Merida, April 25, 1889.

HOW TO DEVELOP AMERICAN TRADE IN GERMANY.

REPORT BY CONSUL WEILEP, OF SONNEBERG.

The business of this consular district with the United States may be called satisfactory, to the manufacturers of the district at least, because the increase of the year 1888 over the previous year amounted to $239,750. The prices have been the same, and the manufacturers here have not been able to fill all orders which they received during the year. This increase is a large one when we consider the bulk of the goods from this district to be dolls, toys, and china-ware.

It is of greater importance, however, to the people of the United States to know what goods of American manufacture and production will find a market here, and, therefore, I will briefly state what goods from the United States I find here and what goods, in my opinion, could be sold here with profit.

Under the first head I find coal oil, patent dried apples, and canned beef. In the hardware line I find a few inferior locks, hay, grain, and manure forks, and grind-stone fixtures. I also found American chairs in all the larger post-offices that I have visited in Germany, and upon inquiry I learned that they were bought by the German Government from a New York firm through a sole agency located at Berlin. In the machinery line I found an American job-printing press here in Sonneberg, and the firm using the same tell me that they could have bought a similar German press for less money, but are satisfied with their investment because the American press is much more practical, not so clumsy, and runs with less power than its German competitor.

Brooms manufactured of broom-corn imported from the United States are sold everywhere, but they are far inferior to American-made brooms, nothing but twine being used to bind them, and the prices are high, selling here from 43 to 48 cents (American money) apiece.

The following goods could be sold with profit if introduced: Mechanical tools of all descriptions and many of our agricultural implements; American timber, and articles manufactured from American timber, because the American timber is superior to the German on account of its growing in a drier atmosphere and therefore much tougher and not so brittle.

A piano factory in Weimar, whose proprietor was a number of years in the United States and worked there at his trade, realizes the value of American wood and uses no other in the construction of his pianos, and this is one reason that his goods give good satisfaction, even when exported to such dry countries as South America and Australia. The same factory exports to the United States, Mexico, and Canada. In this factory I found none but American tools, for the proprietor informed me that his workmen could not accomplish the same amount of work with German tools.

The German nation begins to realize the superiority of American hardware, agricultural implements, mechanical tools, machinery, and many classes of American useful and ornamental fancy goods, and freely acknowledge their perfect finish and durability. Their ingenuity and their practical character are some of the qualities which commend them and place them in favorable contrast to the production of other lands.

The question is how to introduce them. I would recommend to the American trade to adopt, with the view of successfully introducing their wares, specialties, and novelties into Germany, the plan of agencies through well-established business houses having the requisite energy and facilities for putting into the market anything and everything which is likely to be sold after its merits are made known. That there are business houses of this sort in every large German city will not be questioned. Such houses, with all

the machinery of commerce at their command, are always ready to use their power in furtherance of any business plan which promises ultimate success.

The experiment of introducing new goods and novelties of any kind to a people whose national characteristic seems to be to prefer old things (such as their fathers used) to new ones is beset with difficulties, and a glance at some of the impediments which meet at the threshold any attempt to put a new thing upon the market may not be amiss. The American manufacturer makes the first step by asking a well-established commission or jobbing house in Germany to take the agency of a given article of merchandise of undoubted merit. A satisfactory arrangement is entered upon, and the whole machinery of the German business firm is put in motion for the purpose of introducing the new article to the trade. It often happens that the manufacturer must be advised of the necessity of modifying the form of his production in order to meet the wants and tastes of foreign people. Generally a good deal of prejudice against the introduction of a new thing has to be overcome, particularly when something old has seemed to answer every purpose; samples must be freely and gratuitously distributed; incidental expenses for labor and freight must be incurred, and frequently a long time passes before any visible return for outlay is made. But at this stage great care must be exercised in not overstocking the market; nor should the manufacturer sell to others than his agents, because it would be discouraging to a painstaking and honest commission merchant to find that just as a profitable return for his long months of zealous endeavor was to be expected, the very article, the merits of which he had been mainly instrumental in bringing to the notice of the trade, is sold by the impatient manufacturer directly into the hands of petty dealers. He thus loses a powerful and effective ally, and by overcompetition of the smaller dealers ruins the trade.

EDWARD C. WEILEP,
Consul.

UNITED STATES CONSULATE,
Sonneberg, March 25, 1889.

TRADE AND COMMERCE OF THE BAHAMAS.

REPORT BY CONSUL McLAIN, OF NASSAU.

GENERAL COMMERCE.

There was no marked change in the general trade of the Bahamas during 1888, as compared with the preceding year, as will appear from the following statement:

Years.	Imports.	Exports.	Total.
1887	$928,436	$640,210	$1,568,646
1888	930,407	591,425	1,521,832

The volume of trade in 1888 was a trifle below the average of the preceding five years—$1,670,000. Any moderate change like the foregoing is accounted for by the fact that a good portion of the exports is fruit, which is a variable crop.

TRADE WITH THE UNITED STATES.

The subjoined table, showing the trade between this colony and the United States during the past three years, will be of some interest:

Years.	Imports.	Exports.	Total.
1886	$568,093	$605,511	$1,173,604
1887	670,016	547,860	1,217,876
1888	582,250	493,233	1,075,483

As will be seen, there is a falling off of trade with the United States in 1888, as compared with 1887, of $142,393, of which $88,000 is in the imports, the balance of $54,627 representing a decrease of exports from the islands. There is a heavy decrease, amounting to $120,000, in the importation of goods classed in the customs house here as "merchandise paying an ad valorem duty of 20 per centum," made up of woolen goods, linens, silks, hardware, earthen-ware, boots and shoes, etc. This is accounted for by the fact that the importation of such goods in 1887 was far beyond the needs of the colony, being $310,000 as against $181,000 in 1886. The importation of this line of goods, notwithstanding the surplus, was $191,000 in 1888, or above the average. This falling off was offset in part by increased importations of corn, hominy, oats, flour, bran, kerosene, butter, dried fish, and machinery, amounting to about $30,000. There has been no decrease in the proportion of the trade of the colony which the United States has, which is fully 75 per centum, with a slight tendency to increase.

FRUIT.

Pine-apples and oranges are the staple fruits of the colony for export. The trade in cocoa-nuts and bananas is very small, nearly all the latter fruit being consumed at home. The past year was a good one for pine-apples, the shipments invoicing $204,000 as against $155,000 in 1887. These went almost entirely to the United States. The quantity canned at the local factories was fully up to the average. The fruit was good and fair prices were realized.

The orange crop was a disappointment to growers, the quantity shipped being only 2,060,000, as against 3,200,000 in 1886 and 3,800,000 in 1887. The ruling price here on shipboard was $5 per thousand. The fruit went to the United States. The crop is gathered, handled, and put on shipboard in a rather careless manner, no attempt being made to pack neatly, or to assort or grade it.

SPONGES.

The gathering, preparing, and shipping of sponges is the real substantial industry of the colony. About three-fourths go to the United States, the balance being sent to England, France, and Holland. The idea seems to

prevail that the sponge beds are failing, but there is no diminution in the quantity gathered, though the choicer grades may be scarcer, while the steady advance in prices keeps the total value of the export well up to the average.

The amount of sponges exported in 1887 was 697,000 pounds, worth $230,000, and in 1888, 788,000 pounds, value $240,000. The experiment of introducing fishermen from the Mediterranean towards the close of 1887, which caused great indignation and much local excitement at the time, proved an utter failure. After a few months' trial the Greek spongers were withdrawn, it having been shown that they could not compete with the natives, and those who had embarked in the undertaking suffered a considerable loss in both time and money.

SALT.

The salt trade continues greatly depressed, though the shipments in 1888 were a little in excess of some other recent years. The quantity shipped in 1884 was 382,000 bushels; in 1885, 238,000; in 1886, 184,000; and in 1887 only 137,000 bushels were shipped, at an average price of 5½ cents per bushel on board. During 1888 the quantity was increased to 222,000 bushels, the largest amount since 1885, and the price was better, averaging 7 cents per bushel. Enormous quantities of salt could be made, but there is not much sale for it, since it is practically excluded from the United States by the duty. A moderate trade is had with Canada and the West Indies, and small quantities find their way into the United States.

AGRICULTURE.

The crops of 1888 were fairly good, but the people have never taken much interest in the pursuit of agriculture. The soil is too thin and poor to reward the tiller abundantly, and the spirit of the natives leads them rather to scour the sea for wrecks, sponges, turtles, and shells. Considerable interest in agriculture has been lately aroused by the prospect presented in the cultivation of the sisal plant for the production of fiber, the soil and climate having been found to be especially well adapted to this purpose; and many believe that the hemp industry will be as largely and as profitably developed in the Bahamas in the near future as it has been in Yucatan. Already some foreign capital has been invested, and more is promised. Some substantial industry of this kind is sorely needed by this colony. Much might be said on this topic, but, having lately submitted a special report to the Department on the subject, I will not enlarge upon it in this article.

WRECKS AND CASUALTIES.

I am happy to report that there have been fewer disasters to American vessels in Bahamian waters during 1888 than usual. Nine vessels put into this port in distress, seeking shelter and repairs, during 1886, and six came in 1887. We had but one here during 1888. During 1886 five American vessels were wrecked in these waters, and during 1887 eight were lost, while during 1888 the number was only four. These latter were as follows: The

schooner *Elva A. Pettingell* of Portland, Me., 319 tons, from Cienfuegos to New York with a cargo of sugar in bags; the schooner *John K. Souther* of Thomaston, Me., from Philadelphia to Matanzas, Cuba, with a cargo of coal; the schooner *David W. Hunt* of Bath, Me., from Cedar Keys to New York with a cargo of lumber; and the bark *Florence* of Boston, from Fortune Island to New York with a cargo of salt. No lives were lost in any of these disasters, though one of the ships foundered at sea. Portions of the cargoes of two were salved and brought to this port. During the year forty-three destitute seamen were relieved at this consulate, most of them being also furnished with passage to the United States.

NAVIGATION.

The total number of arrivals and departures of steam-ships during the year was 91, with a tonnage of 141,720. Of these 81 were American, with a tonnage of 134,568; the others, 10 in number, being British, with a tonnage of 7,152. The arrivals and departures of sailing vessels were 711, with a tonnage of 56,187; of these 174 were American, with a tonnage of 20,028, and 486 were British, with a tonnage of 34,802.

Our tonnage engaged in the trade of this colony is greatly in excess of that of Great Britain, and is constantly increasing. In 1886 it stood as follows: Tonnage of United States, 139,350; tonnage of British flag, 61,000. In 1888 it was as follows: Tonnage of United States, 154,596; tonnage of British flag, 41,954. This shows during two years an increase in our tonnage of 15,246 tons, and a decrease in British tonnage of 19,046; or, in other words, while our carrying trade has increased 10 per cent., that of Great Britain has fallen off 33 per cent. In view of the fact that the Bahamas are a British colony, this is a condition of affairs as pleasant for us as it is exceptional.

MAIL FACILITIES.

The mail service of the colony was performed during the year by the New York and Cuba Steam-ship Line, James E. Ward & Co., agents at New York, sailing under the American flag. Eighteen trips were made, the colony paying about $1,000 per trip subsidy. The ships are fine ones and the service is well conducted, the trips being made between Nassau and New York fortnightly in winter and monthly in summer. The contract has several years yet to run. To this regular steam communication is largely due our control of the trade of the Bahamas. There is talk all the while of establishing steam lines to southern ports and a cable to the Florida coast, but nothing has been done.

THE FUTURE.

For several years the Bahamas have been financially and commercially depressed, but the future looks brighter. The prospect of substantial benefits to be derived from the culture of the fiber plant has inspired the people with hope, a firm conviction having entered their minds that this industry is to lift them out of their troubles and put the colony on the road to a pros-

perity it has never before known. This pleasing change in the temper and expectations of the colonists is almost entirely due to their present governor, a man of great practical experience and full of unbounded energy and enthusiasm, a portion of which he has succeeded in imparting to the colonists themselves.

The new bank, chartered by the last legislature and empowered to issue its own notes, is about to be opened, which will help business matters materially. There have been no banking facilities here since the disastrous collapse of the Public Bank in 1885.

It is also substantially decided that the different islands shall be connected hereafter by regular and reliable steam communication, the local legislature being in full sympathy with the idea and a grant of Crown aid having been offered by the British Government. This will prove a great convenience and benefit, since heretofore communication has been irregular and by small sailing vessels only, some of the islands being over 400 miles distant from the capital of the colony.

In view of all these considerations, it does not seem rash to predict that the Bahamas are indeed about to enter upon an era of signal prosperity, which, in view of the fact that we have already acquired the bulk of their trade, must to its full extent be beneficial to the United States.

THOS. J. McLAIN, JR.,

UNITED STATES CONSULATE, *Consul.*

Nassau. April 24, 1889.

THE ZAMBESI DELTA.

REPORT BY CONSUL SMITH, OF MOZAMBIQUE.

I have to report that Daniel F. Rankin, esq., a private explorer, has made a very important discovery of a new opening in the Zambesi Delta, connecting direct with the main stream of the Zambesi proper. This new opening is called the Chinge River, and is situated 45 miles south of the Quaqua River, on which Quillimane now stands. On the bar itself of the Chinge River, at the lowest fall of the spring tides, there is a good 3 fathoms of water, with a channel some 500 yards wide and with good anchorage under shelter of the land.

Hitherto commerce has been restricted and confined, because of the difficulties attending the present route from the coast to the Zambesi, both at Quillimane and Inhemissengo, and it has been long felt that such a discovery as Mr. Rankin has made was of the greatest necessity and importance to the development of the vast and rich regions drained by this water-way, and also of the greatest importance to the whole of the districts surrounding Lake Nyassa.

At the present time all goods for the Zambesi River have to be brought up the Quaqua River (where there is only 2½ fathoms of water) to be landed at Quillimane for inspection at the custom-house. From Quillimane the

goods are shipped, in lighters or canoes, up the Quaqua River to a place called Mopea, four and a half days journey from Quillimane. At Mopea the goods are again unloaded and are carried by natives for 6 miles, through a swamp of 2 feet of water, to the Zambesi River, and from Senna or Fete, on the Zambesi, steamers connect with all points of importance in the lake districts.

It will be readily seen what a great expense is attached to the transportation of goods by this route, because not only have packages to be handled many times before they arrive at their destination, but they also have to be small enough to be carried with ease by the natives across the 6 miles of swamp between Mopea and the Zambesi River.

By the Chinge River, the new opening discovered by Mr. Rankin, vessels of from 500 to 600 tons burden can go direct from the sea to the Zambesi, and thence to the Lake Nyassa districts without any change, and with none of the bother now existing in connection with tides and seasons of the year.

The governor-general of this province, after having verified Mr. Rankin's discovery, telegraphed to the Portugese Government, requesting that the seat of the governor of Quillimane be removed from its present place, on the Quaqua River, to the mouth of the Chinge River, and that henceforth all mail steamers be directed to call at the latter place instead of, as heretofore, at the former. If this request is granted it will be very easy to see what value the Portugese put on a good opening to the Zambesi River.

ERNEST W. SMITH,

UNITED STATES CONSULATE, *Consul.*

Mozambique, March 12, 1889.

SUGAR CROP OF SANTIAGO DE CUBA.

REPORT OF CONSUL REIMER.

CROP AND SHIPMENTS TO THE UNITED STATES.

Considering the present price fluctuations in the sugar market in the United States, I have thought it might be of interest to our commerce to study this crop's prospects, and the estimated amount of sugar it will yield. With this view I have prepared the following statement, in which I name all the sugar estates in this vicinity the sugar of which is shipped through this port.

Statement showing the shipments of sugar from Santiago de Cuba, up to April 26, 1889, and estimated amount of the whole crop of 1889.

Name of estate.	Pounds shipped.	Estimated crop in pounds.	Name of estate.	Pounds shipped.	Estimated crop in pounds.
Wyorana	1,899,788	2,500,000	San Luis	1,416,457	2,800,000
Palmira	65,260	900,000	Palmaryo	842,228	1,100,000
Sabanillo	1,192,638	2,300,000	San Sebastian	675,562	2,700,000
Hatillo	2,266,258	2,800,000	Sileno	.....	200,000
Union	4,336,293	6,000,000	California	.....	900,000
Belleza	1,569,000	1,700,000	Total	15,319,915	26,400,000
Santa Anna	1,056,431	2,500,000			

The above statement shows 15,319,915 pounds, or 49,594 bags, already shipped from Santiago de Cuba, all to the United States. Of this quantity only 2,036 bags, net 636,239 pounds, were molasses sugar, the remainder all being centrifugal sugar. Rains and the want of labor have retarded the crop considerably, and it will no doubt take all of next month to finish reaping it. However, with the better prices and present indications of fair weather the planters are well satisfied with their prospects.

MANZANILLO.

As soon I can receive figures from the consular agent at Manzanillo I will send you a statement* which will show a considerable increase in the production of sugar, several new estates grinding much more sugar than last year. The consular agent writes that the crop is very backward and it is therefore impossible to collect data and form any idea of the possible amount of it. He further states that this crop has been greatly retarded during November and December, when heavy rains fell, causing the canes to yield very little. Even the dry season had its intervals of rainy weather, which very often interrupted grinding. All the estates of Manzanillo either put up entirely new and powerful machinery or improved on the existing machinery by adding the newest inventions and improvements. This caused them to begin to grind very late. Sugar planters of Manzanillo are also bitterly complaining of the scarcity of labor, which seems to be worse this year than last. This fact is not surprising, as the working population has not increased with the greater demand for labor produced by the growing estates, which, for reasons above stated, need many more hands. Of immigration there is absolutely none.

WAGES.

The most marked increase in the price of labor is noted at Manzanillo, where field laborers who formerly received from 80 to 90 cents per day, out of which they had to nourish themselves, now are paid $1 to $1.50 per day besides being fed. Expert cartmen get as much as $2 per day.

It is the opinion of Consular Agent Stakeman that the result of this crop at Manzanillo, allowing for breaking down of machinery and like accidents, will depend entirely on the weather, as all estates have abundant cause to make a crop much larger than last year; but, however favorable the weather, even allowing for a continuance of a month of dry weather, very few estates will be able to grind all their cane. Sugar in store here at Santiago de Cuba I estimate at 1,500,000 pounds.

OTTO E. REIMER,
Consul.

UNITED STATES CONSULATE,
Santiago de Cuba, April 26, 1889.

* Statement received and published herewith.

GUANTANAMO SUGAR CROP.

Names of estates.	Sugar shipped to the United States since January 1, 1889.		Estimated crop of 1889.
	Bags.	*Pounds.*	*Pounds.*
Soledad	15,884	3,363,585	8,000,000
Romélie	15,393	3,290,251	4,600,000
Santa Cecelia	17,084	3,773,103	6,500,000
Isabel	17,039	3,628,005	6,200,000
Santa Fé	4,182	983,156	1,700,000
Los Caños	12,207	2,474,213	4,000,000
San Miguel	7,514	3,259,611	4,000,000
Confluente	5,484	1,640,078	2,700,000
San Carlos	7,716	2,315,031	3,500,000
San Emilio	3,715	1,114,116	1,300,000
San Ildefonso	3,402	1,013,142	1,500,000
Santa Maria	887	266,152	4,000,000
San Antonio	10,510	3,297,939	4,800,000
Santa Rosa	.....	.....	4,500,000
Esperanza	.....	.....	5,500,000
Total	121,017	30,412,382	62,800,000

SUMMARY.

	Pounds.
Sugar shipped to the United States	30,412,382
Estimated crop	62,800,000
Total	93,212,382

MANZANILLO SUGAR CROP.

Shipment of sugar from January 1 to April 30, 1889.

Names of estates.	Bags.	Hogsheads.	Gross weight.
From Manzanillo to the United States.			*Pounds.*
Sta Teresa	18,739	7	5,851,533
El Salvador	4,272	.....	1,434,950
Esperanza	4,392	.....	1,468,000
Tranquilidad	5,635	.....	1,727,692
Isabel	2,750	.....	833,333
San Ramon	9,265	.....	3,074,660
Sta Sofia	1,300	.....	426,999
Cuentas Claras	.....	50	94,174
Total	46,353	57	14,911,341
Coastwise.			
Dos Amigos	11,593	.....	3,602,450
Isabel	11,450	.....	3,469,797
Sta Sofia	400	.....	132,000
Total	23,443	.....	7,204,247
Summary.			
Total shipped	69,796	.....	22,115,588
Stock calculated	25,000	.....	8,150,000
To be shipped	94,796	.....	30,265,588

The following figures show the quantity of sugar that may yet be made during this crop, in the jurisdiction of Manzanillo, if the weather permits; the calculation is based on the quantity of cane still standing in the different estates:

	Hogsheads.
San Luis	1,000
Isabel	1,500
San Ramon	11,000
Sta Teresa	1,200
Dos Amigos	1,500
El Salvador	600
Tranquilidad	800
Esperanza	1,000
Total	18,600

W. STAKEMAN,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Manzanillo, April 30, 1889.

IRISH LACE.

REPORT BY CONSUL PIATT, OF CORK.

The development of taste leading to an appreciation of hand-wrought work, having improved of late years, some interest has manifested itself in the cultivation of lace and embroidery used for decorative purposes. As a consequence, Irish lace, already somewhat celebrated, is attracting attention among all engaged in the direction indicated.

DEFINITION.

The term Irish lace necessarily conveys but a general idea of this fabric, which, in itself, possesses a series of distinct varieties, each with its own peculiar merit and application. These are generally classed as follows: (1) Flat needle-point lace, (2) raised needle-point lace, (3) embroidery on net, (4) cut cambric, (5) drawn thread-work, (6) crochet work, (7) pillow lace, (8) tatting.

DETAILED DESCRIPTION.

Flat needle-point lace.—Flat needle-point lace is of the first importance, as the method of making is precisely that adopted by the Italian workers of the sixteenth century, a process which lends itself to the expression of the most fanciful idea of the artist, designer, and worker. M. Lefebure, in a recent work, refers to this lace in the following terms:

The delicate, sculpturesque creations of the needle, with gradations of gentle relief, may be said to be comparable with other laces, as marble sculpture is with wood-carving. Charles Blanc, comparing the two classes of hand-made laces, makes the following very apposite remarks: "The dominant character of pillow-made laces is the soft blending of its forms; the needle is to the bobbin and pillow what the pencil is to the stump; the pattern—of which

the definition becomes softened when wrought in pillow-lace — is depicted with crispness by the needle. This, in a measure, accounts for the relative importance of needle-point lace and its higher value. Point lace is most suited to occasions of state, and rightly possesses a universally recognized prestige."

Many of the most valuable specimens of ancient needle point at present in existence have been reproduced by Irish lace-workers with success, notably a flounce made at the Convent Youghal to order of Mr. Ben Lindsay, Dublin, who supplied the original, while modern designs, in fine renaissance pattern, have been executed at the Convent of Poor Clares, Kenmare.

Raised needle-point. — Raised needle-point lace, termed Innishmacsaint lace, is made in the district bearing this name, near Lough Eine, County Fermanagh; also, at the Carmelite Convent, Wexford, and at Cappoquin, County Waterford. The articles mainly produced at the present time are flounces, trimmings, handkerchief borders, and collarettes. Though this lace is, comparatively speaking, high in price, the annual output at the various centers of production scarcely averages £3,000 ($14,599.50).

Embroidery on net. — Limerick has long been noted for its manufacture of a lace which is of a distinct character from that already mentioned, being simply an embroidery on net, with either chain or darning stitch. It possesses the merit of being extremely light and adapted to good display of pattern at a low price. Prior to the development of machine looms for lace making and the improvements lately made in the embroidery districts of Plauen (Saxony), this industry had been of considerable importance. Recently, however, by the attention given to the improvement of designs and workmanship, it is likely to be again popular in public favor. The making is not confined altogether to the district of Limerick. The sea-port town of Kinsale is also producing good work.

Cut Cambric. — Lace made by a similar method, but in some respects resembling point, is made at Carrickmacross; it is termed *appliqué*, and closely resembles the old point d'Angleterre, consisting of floral devices applied on mesh grounds. Though this lace has been produced in this district for the past forty years, few improvements in design have been made. As the quality of this article is directly affected by its pattern, it is obvious that improvement in this direction is of importance. Excellent designs are now made with successful results in working.

Royal Irish guipure. — Workers in this district also produce lace consisting of guipured cambric, the pattern being outlined by a cordonnet or thread, and the ground cut away as in embroidery, the "motifs" being held together by a single thread generally ornamented by loops or picots. In France, this lace is termed Richelieu embroidery, and is popular for ecclesiastical decorations.

Drawn-thread work. — Drawn-thread lace-work is one of the earliest known in the history of lace. Specimens have been produced in Ireland, under the direction of Miss Keane, Cappoquin, and Mrs. Hall Dare, Newtonbarry, with success, but the industry does not appear to be cultivated to any extent.

Pillow lace. — Comparatively little pillow lace is made in Ireland, and that only of the simplest description, known as *torchon.* Formerly, it was much employed at Tallow, County Waterford, and various other districts in Ireland, but the introduction of an imitation by loom and the imports from the Auvergne districts caused the pillow, with its bristling back of tiny pins and fringe of dainty bobbins, to be cast aside, the receptacle of a web more delicate, but less substantial, and woven by that cruel creature of disuse — the spider.

Tatting. — A pretty notion in needle-work, called *frivolité* by the French ladies who practiced it, is made at Ardee, County Louth, under the name of tatting. Many articles, such as collars, cuffs, parasol-covers, and handkerchief borders, are made with it. The worker, using a small shuttle and needle, soon produces her pattern of circular forms filled with picots on each side. The special characteristics of this work are lightness and cheapness. It can not be said to be of a durable nature. Though large quantities are exported to the United States, still the prices are so low that workers do not care to engage much in it.

Crochet work. — The fabrication of articles by means of stitches formed with a crochet-hook is a comparatively modern invention. Little is known of plain crochet prior to the introduction of pattern books by the late M'lle Riego de la Branchardiere, in 1846. This lady subsequently used it as a means for imitating needle-point laces, particularly those known as Spanish raised point, Venetian, and Cluny laces. Articles made in this fashion attracted attention at the London Exhibition of 1851 and Paris Exhibition, 1855. Many pattern books exist that have been produced since that period, but little progress in design appears to have been made. This is all the more strange, as the making of crochet has become one of the staple industries of Ireland, and is largely produced in France, Germany, and Belgium.

The Irish workers have been reproached with this fact, but the dealers and peasantry responsible for the work are not wholly to blame, as pattern books are published in London that pretend to rank as standard works, yet they contain patterns destitute of the elementary principles of design in their construction. Alluding to this matter, M'lle Riego de la Branchardiere once remarked that she believed crochet yet needed being developed to its full capacity. This has been demonstrated recently by experiments in improved design carried out under the direction of Mr. Allan S. Cole, of the science and art department, Kensington, London, for a committee devoted to this purpose. Many of those specimens were exhibited at the late Irish Exhibition, London, and are sufficient to convince all interested that with good designs, material, and proper guidance, the workers of crochet in Ireland can execute work that compares favorably with the best modern laces, its merits being solidity of motifs, lightness of ground, and harmonious effect of pattern and texture.

THE POPULARITY OF CROCHET WORK.

The making of crochet has, of late years, become popular as a branch of needle-work with the women of different countries. We are told of ladies having introduced this work into Oriental courts, and using it for philanthropic purposes, by acquiring the art and then teaching it to the peasantry of Poland and Russia.

The countries generally recognized as exporting for commercial purposes are France, Germany, and Ireland. The German goods, though remarkable for taste in mixing of threads and neatness of work, still possess but a small range of patterns, and those only of the simplest nature. For this reason they hold the foremost place for woolen goods, which require simplicity of stitch and taste in arrangement of colors. They possess, also, the advantage of using their own wools, which, for superiority of quality and color, are unexcelled. Large quantities of antimacassers, jackets, and rugs worked in woolen crochet are exported annually from Germany, Berlin being the seat of the industry. France takes a prominent position in exporting cotton articles, such as bed-spreads and antimacassers, made in the provinces. The patterns used are also simple, and no attempts at improvement appear to be made in this respect. They are disposed, however, to use fancy threads in color and tinsel for the sake of novelty, but the quality of the work is always good. As in Germany, the success of this industry in France is, in a large measure, due to the cheapness and good quality of its cotton threads. This, with the low price of labor in the provinces, as well as its duty on foreign manufactured goods, established it at once as one of the most important countries for exporting crochet work.

IRISH CROCHET WORK.

The south of Ireland has long been recognized as the principal seat of this industry. It was introduced into this country as a means of providing employment for the poor peasants during the famine period of 1847, and has since flourished. The art was taught through schools, convents, and benevolent individuals, but does not appear to have been taken up on regular commercial principles until ten years later. About 1860 two recognized dealers were established in Cork, who exported large quantities to England; the class of work produced was excellent and good prices were obtained, the articles being novel and little competition with machine-made products, so severe in later days. Cotton crochet antimacassers appeared about 1868 and rapidly gained in favor. The exporters, finding it difficult to meet the demand, worked up the surrounding districts within a radius of 20 miles of the city of Cork, besides forming connections for supply in the counties of Limerick and Waterford. The importance of this trade is shown by a statement recently made that the export trade of Cork alone, in 1880, amounted to £18,000 ($87,597); but since then it has steadily declined until, in 1886, it scarcely reached £9,000 ($43,798.50). The principal articles produced for export at the present time are antimacassers, bed-spreads, doylies, and cushion-covers

in coarse threads, collars and laces in fine threads. The range of designs in these goods is very extensive, and the work generally firm and clean. The largest manufacturers at the present time are Messrs. Dwyer & Co., limited, Cork, whose goods are exported to, and are already well known in, the United States.

LACE MAKING AS A COTTAGE INDUSTRY.

The south of Ireland is distinctly favorable for lace making as a cottage industry, the district being largely agricultural. While the male members of a family are engaged out of doors during the day, the wife and daughters are enabled to devote their time advantageously in the house. In many instances it occurs that, owing to enforced idleness on the part of the bread-winners, the small income gained by the female members remains the sole support of the family. It is worthy of note that when this industry became depressed in 1883 large numbers of workers emigrated to America and great distress prevailed among those at home.

During its prosperous period, the earnings of the daughters of the house served to keep the roof over their heads, and instances are known where it contributed largely to pay the rent of the little holding and keep off for a time the advent of an evil day.

Apart from these considerations the influence of such work is highly valuable as an educational medium; habits of thrift, attention, and cleanliness are cultivated, and a cheerful tone of contentment prevails in the household; the children of the family being kept together, influence each other under the immediate supervision of the parent. All this affords a very favorable contrast to the factory system of labor, so fraught with dangers, and such a stumbling block to the general education of the masses.

The Irish workers, under difficult circumstances, have cultivated and persevered in the art of lace making to an extent that has made them formidable rivals to the present lace schools of Italy. Venice, with its noble traditions of centuries, its subsidy from the State, and its powerful commercial patronage, can hardly excel the modest communities of Youghal, Kenmare, or New Ross, in the production of its choicest laces with the needle.

A tendency to still greater improvement has been manifested by the formation of drawing classes in convent work-rooms, and taking advantage of the facilities offered by the Government department of science and art, Kensington. It is to be hoped that this improvement will be maintained by the support of purchasing communities, and that public taste will continue to develop its love for artistic handicraft, a taste so eminent in all art-loving generations and people.

It is proper to say that I am chiefly indebted for the information contained in this report to Mr. Michael Holland, an intelligent employé of Messrs. Dwyer & Co., of Cork, already referred to as the principal manufacturers and exporters of crochet work.

JOHN J. PIATT,
Consul.

UNITED STATES CONSULATE,
Cork, May 4, 1889.

SUGAR-CANE DISEASE IN JAVA.

REPORT OF VICE AND DEPUTY CONSUL WOOD, OF BATAVIA.

A congress, composed of planters, exporters, and others interested in the production of sugar, has just closed its session at Samarang, Java. The object in view in calling together this assembly was that by special essays upon questions of moment and by the general discussion thereby evoked not only suggestions might be secured as to the most economical working and best methods in the field and in the mill, but also that measures might be devised for competing with the beet-root sugar interest of Europe. The most important matter, however, brought up for debate was the subject of the cause and cure of the "sereh" disease, which is now spreading with the greatest rapidity and with disastrous results through the cane fields of western and central Java.

It was three years ago only that this pest was first discovered in plantations near Cheribou, yet since that time, so thoroughly and quickly have those lying to the eastward of them become affected by the disease, that canes near Saurabaya have also been attacked. To the nature of the pest must be undoubtedly ascribed this wide-spread infection, though, without doubt, carelessness on the part of the planters themselves has had much to do therewith, as is evident from the remark of one who has made careful inquiry into the facts and probable effects of the seret trouble upon the crops for the coming season. Said he:

Unfortunately the disease has broken out on one estate in the Madioen residency (central Java), while on three others therein symptoms have been discovered which make it almost certain that these latter have also been affected. In 1887 and 1888 seedlings from a Madioen plantation, which was then believed free from infection, were sent to other estates situated more to the eastward, and in the fields planted with these seedlings sereh has been detected. With these exceptions, the condition of the outstanding crops is a fair one. Although the matter is serious enough, there is still a hope that this year's eastward crops will not be too heavily injured, and that the disease may be confined to comparatively narrow limits, the majority of the plantations to the eastward having lately renewed the bulk of their seedlings so as to be in a position to repulse any attacks of the disease. Besides, the planting of newly generated canes is actively pushed on. Certain estates have a supply of seedlings from eastern plantations free from the pest, and it is unlikely that serehs will at once spread over the whole area under sugar cultivation in eastern Java from the few acres planted with infected seedlings from Madioen.

While the disease is thus spreading in the center of the sugar industry, it seems to be dying out in Cheribou at the places of its first appearance.

Various remedies have been proposed and essayed in these localities, but their application has been attended as yet with partial success only. The project which met with the most favor was that of introducing the great canes of Borneo, not only because their roots seemed to resist the attacks of the worm, but also because their greater bulk promised increased returns of

juice and saccharine matter. In reply to my inquiry as to the reported small yield of sugar from this variety, Mr. Tiedeman, consular agent, writes from Samarang:

Regarding the introduction of sugar-cane from Borneo into Java, I learn that nothing positive can as yet be said as to the results of the experiment, which has been tried for the past two years only. Some planters assert that the Borneo cane contains too much watery substance, while others declare that the yield of saccharine matter is satisfactory. The cane itself looks strong, and, as a rule, is thicker and much taller than the Java variety, but it is still a question whether it will not deteriorate. Meanwhile I may add that the experience of this year has taught that the Borneo cane is slow in shooting out, and this may stand in the way of its being imported largely into Java.

That this solution of the difficulty is far from satisfactory to the majority of those interested in sugar production is shown by the fact that the Handels Bank here, which is directly concerned through loans to planters, has taken the initiative in asking from the Government the use of tracts of land on other islands for the purpose of growing seedlings of the varieties now in use in Java for planting in infected soil here.

The cause of the sereh disease is unknown. Some persons ascribe it to the deterioration of the cane itself; others to that of the soil. The natives claim that the use of artificial fertilizers, composed of a mixture of many materials, in place of the oil-cakes from "patjang," or earth nuts, formerly employed, has given rise to this trouble.

Meanwhile the congress has subscribed a fund of 220,000 guilders ($90,000) to engage a bacterialogist to come from Europe and investigate the cause of the malady and devise its cure. Feeling convinced that planters in the United States have studied questions of a similar nature, I have inclosed herewith a description of the sereh worm, in the belief that a suggestion as to its extermination would be valued by the authorities and would prove for the interest of all concerned.

For exporters the importance of this subject lies in the fact that not only is the sugar crop reduced in quantity by the disease, but is also injured in quality as well, inasmuch as juice from diseased canes shows on analysis an unusual amount of glucose.

HORATIO G. WOOD,
Vice and Deputy Consul.

UNITED STATES CONSULATE,
Batavia, March 13, 1889.

[Inclosure in Vice-Consul Wood's report.]

TYLENCHUS SACCHARI, N. SP.

(From the Agricultural and Horticultural Review of August 1, 1887.)

The nematoden are without doubt the most dangerous parasites of the sugar-cane. Of these we discovered in the roots of the sugar-cane *Dorylaimus heterodera* and different species of *Tylenchus*. Of the last species one special kind particularly drew our attention, because it has been found in great abundance in the cane fields where the worms cause the most wide-spread devastation. This *Tylenchus* being a real parasite of the sugar-cane, we have not found in literature any mention regarding its habits, we have therefore given it the name of *Tylenchus sacchari*.

The plants attacked by these parasites show very characteristic disturbances in their growth, which are immediately known to planters. The plants are then considered to be sereh sick. Yet we must confess that we have not always, and without exception, discovered the *Tylenchus sacchari* in the roots of sereh-sick plants. In some few cases we have not found this parasite in the roots of typical sereh-diseased plants; on the other hand, we have, however, found the *Heterodera Javanica treub.* Owing to the fact that the *Heterodera* also destroys the roots of the sugar-cane, we must not be surprised to see that this destruction also disturbs the proper growth of the cane.

The *Heterodera* we have so far only been able to discover in a few plants, whilst the *Tylenchus sacchari* is found in whole fields of the most widely separated estates. We therefore came to the conclusion, that this latter species of parasite is, in its presence in the sugar-cane, of a more dangerous character than the former, and for that reason we consider the *Tylenchus sacchari* to be the cause of the sereh disease, but we are also convinced that the *Heterodera* can also cause the same result. We have only once discovered the *Dorylaimus* parasite in the cane roots.

We state here in advance that we do not wish it to be supposed that it is our present object to give such information about this dangerous parasite as could be considered decisive; on the contrary, it is our object to draw general attention to this parasite, in order to induce others to make a more careful study of its habits, as to cause our knowledge of this parasite to be more widely known, whilst we ourselves will continue to increase and improve the same as much as possible.

The *Tylenchus sacchari* are sure to be found in the greatest abundance in the young roots of the sugar-cane at the time when the first symptoms of disturbance in the growth of the plant above ground, so highly characteristic of the sereh disease, is visible, especially so in the months of December to March. Then already the majority of the upper roots, which have formed themselves after the canes have been banked up, are completely destroyed, so that very often not even the débris of the same are to be found. You will also notice that part of the cane which is above and under the ground only bears a few eyes which form the sprouts or shoots for the second generation. These sprouts of the second generation spring quickly up with great vigor, are again attacked by the parasite, and in a short time totally destroyed. Roots attacked by the *Tylenchus* never throw out root fibers again. The snow-white roots of young, sound plants show, when attacked by this parasite, a reddish tint and are transparent in substance. These roots are filled with well-developed worms and eggs, and larvæ in different stages of development.

The young and juicy roots, formed from the young sprouts, growing underneath the upper crust of the ground, supply the parasite with abundant food to multiply and increase innumerably. The older and harder parts of the roots can not be attacked so quickly by the *Tylenchus sacchari*; only the young and tender shoots growing out from these roots are destroyed; the consequence is that the older roots throw out new rootlets, which are again attacked, and so on until the parent roots are entirely exhausted and die out.

The more severe the disease has been, and the more roots have been destroyed, and the less force the plant has to form now roots, will this parasite find less nourishing food; and it is owing to this fact that, according to my opinion, it is with the greatest difficulty that a parasite can be discovered in plants which are in the last stages of the disease. The parasites are then driven by hunger to seek out other and more vigorous plants for food.

We wish once more to call attention to the fact that the young and juicy roots which sprout direct from the cane are the focus and breeding places of this parasite. In the cane itself, we have very seldom found the parasite, and when found it was always in that part of the cane which was underground, and only there, where it has already been destroyed by other parasites, therefore we have never found them high up above grounnd, or between the leaf stalks. The development of the parasite, therefore, takes place in the roots only, and there it has its abode during all its existence, and it is only when abandoning a destroyed root in search of a living one that it is discovered in the ground. Besides the sugar-cane we have so far only found the

parasite in the roots of the sorghum plant. In the roots of rice and maize we found several varieties of the *Tylenchus*, but whether among these *Tylenchus sacchari* is to be found, we can not for the present state with any certainty. Both sexes of the *Tylenchus sacchari* are found in almost equal proportion; their sizes can not be said to vary much from each other. The size of the female is 0.77 millimeter; that of the male, 0.71 millimeter; the œsophagus attains with both sexes a length of almost one-sixth, the tail of both almost one-thirteenth of the length of the body. The vulva in the female is found at a distance of one-fifth of the length of back part. The width of the female is 0.03 millimeter, that of the male 0.026 millimeter. The length of the eggs is, on an average, 0.1 millimeter, the breadth, 0.025 millimeter. The stylet is, in length, 0.012 millimeter. The porus excretorius extends very high, and is 0.027 millimeter distant from the mouth. The stylet, with three knobs underneath, so characteristic of the species of *Tylenchus*, is very distinctly seen in this parasite. To these knobs it seems that a strong muscle is attached. We very often saw the dart pushed out of the mouth as far as the half of its length. The embryo also uses this dart to pierce the thin cuticle in which they are enveloped. During the period of sloughing, these knobs disappear, and the dart becomes very much attenuated. Whether it entirely disappears, and is again afterwards reformed, we can not as yet say with any certainty. Now and then, but very seldom, have we observed that during the sloughing the dart disappears very deep into the throat. The œsophagus, with the two bulbus is, as well as with other species of *Tylenchus*, very distinctly to be seen in this parasite. The same thing with the intestines, as they are covered with large grains. The aperture of the mouth is found in front, above a little projection, to which little lips are attached. The little rings of the integument of the *Tylenchus* we have not been able to find in this parasite. The side membrane, or web, can only be seen in the male, and is very small. As well as with all other species of *Tylenchus*, the *Tylenchus sacchari* has, as far as regards the side vessels, but one only, which extends through a small porus to the belly. This porus seems to be covered by a cuticle, which is very distinctly visible in the sloughed skin. The ovary is uneven, and sometimes very distinctly visible. It extends as far as the under part of the œsophagus. The vulva forms a broad split, with somewhat swollen lips. A uterus is not to be discovered. In the male the penis is not very distinctly marked; we also could not discover any well-developed spermatozos. After ejections, they resemble little round productions. The bursa is very small, and is quite free from the point of the tail. The two spiculi are clearly visible, but the accessory nerve we could not, however, discover. The eggs, after having been fecundated, are generally thrown out before their final development, though we saw at times in the body of the female an egg with a well-developed embryo. In the egg membrane is often seen a small navel-speck, which is, perhaps, formed by the injected spermatozos.

In order to be able to oppose successfully this parasite, it is especially necessary for us to know exactly its habits and domestic economy. We ought to know in what way it spreads and multiplies, and the best means of extirpating this parasite, and whether it is liable to sickness or disease.

We are at this moment quite convinced of the fact that the parasite is disseminated not only from the cane cuttings which have taken roots, but also from the earth from infected gardens. On the other hand, we do not think that the *Tylenchus sacchari* is brought in the top cutting or seeds of the cane plant, if they are free from infected earth. Further, it seems to us that this parasite, in order to develop, requires a great deal of moisture. Very often we found, after several consecutive dry days, when no rain whatever has fallen, in the roots very many parasites which had died. After long and incessant dry weather the *Tylenchus sacchari* is found sporadically only in high-lying grounds. The fact that the *Tylenchus* loses its vitality in consequence of long-continued dryness or drought, we can explain as follows: Young roots, which were quite full with *Tylenchus*, we have dried in the air, and a few weeks afterwards, after having put moisture on them, we examined them. The results were that the *Tylenchus* were quite motionless, and that, also, after twenty-four hours no signs of life were observable in them.

DR. F. SOLTWEDEI.

COGNAC AND ITS WORKING CLASSES.

REPORT OF CONSUL EARLE.

THE TOWN OF COGNAC.

The town of Cognac is one of the most ancient in this section of France, its history stretching back through the Middle Ages to the Roman invasion of Gaul. The present town, however, may be dated from the time of Francis I, of Catherine de Medici, and the religious wars. At these epochs Cognac was a place of considerable importance, first from the affection Francis always bore it (his birthplace), the frequency of his visits here with his court, and the privileges and immunities he conferred on the town; and later by the importance attached to it from a strategic point of view by the Admiral de Coligny, the Prince de Condé, the Count de Harcourt, and others, and was the scene of many battles and sieges between those captains. I mention these historic facts to give some idea of the physical appearance of the town, the plat and plan of which, I take it, are much as Francis I and Charles IX left it.

It is nearly circular in form, of a radius of about 1 kilometer (kilometer = 0.621376 of a mile), and is divided into two unequal parts by the Charente River. The bulk of the town, say two-thirds, lies on the left bank of the stream; that on the right bank is called the Faubourg St. Jacques. The Charente is navigable as high as Angouleme to small schooners and luggers, but as high as Cognac to vessels of that class of from 100 to 150 tons burden. It is estimated that two-thirds of the brandy made here is shipped to the sea-coast by the Charente River. There is an excellent quay extending from the Pont Neuf (a beautiful stone bridge which connects the town and the faubourg) about 400 meters down the stream. The town and the faubourg both slope gently down to the river, thus insuring over its paved streets perfect surface drainage.

The streets, as a rule, are very narrow and inexpressibly crooked. The principal ones are paved with Belgian blocks, laid on a deep foundation of concrete or macadam. Others are simply macadamized with the soft native cretaceous stone. The sidewalks are also very narrow, paved with granite or hard artificial stone, and curbed and guttered, as a rule, with granite. There is an extensive park, extending more than a kilometer up the river from Pont Neuf, and many smaller open spaces scattered through the town, where the inhabitants can get fresh air in summer. Among the latter are Place François I, Place de la Corderie, Place Beaulieu, Place de la Salle Verte, Place de la Sousprefecture, etc. All these places, except that of François I, are planted out in trees and supplied with benches. In the summer these open spaces are frequented by rich and poor alike, and in all seasons, when the weather permits, they are used by the children as playgrounds.

The town is supplied with water from the River La Douce Charente (the Sweet Charente, it is called), and above and below the pump-house for certain given distances the stream is rigidly policed to see that the water is not polluted. The supply of water is abundant for all domestic and sanitary purposes, and is apparently quite pure. There are many public plugs or hydrants where the poor, who have no water connections in their houses, can supply themselves.

HOUSES AND HOUSE RENTS.

The geological formation is a soft, white, cretaceous stone, which seems to underlie the whole country at quite a shallow depth. This stone is easily quarried and the quarried stone easily dressed. The latter operation is usually done by a single workman, who saws the blocks into such sizes and shapes as he chooses with an ordinary cross-cut saw, and afterward smoothes off the blocks with a plane like a jack-plane. From the abundance and cheapness of this stone it forms almost the only building material used in the construction of the walls of houses. Where brick is employed at all, it is generally only as an outer coating, or veneer, on the front wall, the rest being of rubble-stone. Hence I may say that almost all the houses are built of stone, the better ones faced and trimmed with sawn stone and the commoner ones of rubble stuccoed, and all are roofed with red, corrugated, earthen tiles. My observation is that for this climate the houses are, as a rule, comfortable, and the rents demanded for them are not high. An ordinary family of working people would require, for example, a kitchen, two bed-rooms, a share of a cellar, and a share of an attic. These accommodations would cost them from 200 to 250 francs a year.

THE BRANDY INDUSTRY.

The brandy trade is the principal if not the sole industry of Cognac. This includes the distillation of the celebrated brandies, the blending of them, and their preparation for market or export. Around these industries, of course, are clustered others, as hoop and stave making, cooper shops, case making, glass blowing, lithographing of labels, etc., not to speak of others directly concerned in the production and manipulation of the brandy. In former years, before the ravages of the phylloxera on the vines of La Charente began to be so severely felt, the great plain lying southeast of Cognac, an ellipse of about 15 by 25 kilometers, was one vast vineyard. Here was produced the grand fine champagne, which gave to the brandies of this part of France the pre-eminent name of cognac. These vines have disappeared, however, almost to a root, and all those who formerly made good livings by tilling and pruning the vine and gathering the rich harvest find their vocation gone. It was formerly the custom—and still is when any one is lucky enough to have a vineyard which the phylloxera has spared—for each small proprietor to make his own wine and to distil from it his own brandy. These brandies—new or old, according to the ability of the producer to hold them to age—are sold to the great export houses, whose

names we see on the labels of bottles of cognac in American restaurants. By these latter the brandies are simply blended. As a matter of fact, I believe but little brandy is distilled by the houses best known in America in connection with cognac. Of its adulteration, and whence is derived the materials for its legitimate production, I have nothing to say in this place. My predecessor, Mr. Malmros, has already treated ably of that subject in his report on cognac brandy to the Department, December 16, 1888. It is enough for my purpose to say here that the vines of the grand champagne, or, in other words, the environs of Cognac, are dead, and those who were formerly profitably employed in the culture of the vine and the manipulation of its products are either not employed or are inadequately so. To the former class belong the old people, the women and children, all of whom could make themselves useful during the harvest, etc.; to the latter, adult men, trained to that work, and, so far as it is concerned, skilled laborers. These latter are now degenerated into common hands in consequence of want of work in the fields. Both these classes have come in great numbers from their hamlets to Cognac to try to earn a living, or get one somehow, in town. As is to be expected from such an influx of unskilled labor, the price of that commodity has gone down. Many have not succeeded in getting any work and great poverty and beggary are frequent.

A custom prevails here among those who can afford it of distribution of alms to the poor on the day of the interment of a member of the family. These alms may take the form of a loaf of bread or a sum of money, varying from a few sous to several francs, to each poor person who applies. Several days ago the remains of Mr. Martell, a member of the great house of Martell & Co., were brought here for burial, and, notwithstanding the cold, drenching rain, the streets were thronged with the poor in all stages of poverty — from seedy middle-aged men and women and old crones, bent double with age and clothed in rags, to young, wretched-looking females carrying and leading half a dozen miserable children. The last I discovered, however, was a dodge. The aumône was distributed during three days, and when a single poor person presented him or herself they got a certain small sum of money. When, however, they were accompanied by children they got larger alms. Hence, the babies and ragged urchins of a quarter were pooled and carried and led in squads by different women, at different hours, and on different days. One of Mr. Martell's employés told me that there were over two thousand who applied the first day, and on the two following days I did not observe much diminution in the throng of miserable-looking folk on the street. Of course, the major part of these were "repeaters." But this episode will give some idea of the amount of poverty there is here.

WAGES.

The average wages which working-men get in Cognac may be stated to be from 48 to 58 cents a day. Of course, skilled laborers, as distillers, blenders, master coopers, etc., get more, but, as a general rule, when I ask

an employer how much he pays his men, he gives me the above figures. Girls and women in service get from $1.93 to $3.86 a month, board and lodging. For this they do the family work. Charwomen working by the day, sewing women, etc., get 40 cents when they board themselves, and 28 cents where their breakfast, eaten at noon, is furnished them.

These prices, one would say, are not so extremely low if the necessaries of life are cheap in proportion. Such, however, is not the case here. What we call in the United States the necessaries of life are not by any means cheap, and many articles classed by us under that head are much dearer here than at home. I append to this report a list of articles, with prices current at this season. I am not at this moment able to give the prices of clothing, and so content myself with saying that all articles of clothing, except cotton goods, are cheaper here than in the United States. Shoes and hats don't count for much, as the poor universally wear wooden shoes and home-knit caps.

FOOD.

Bread here is literally the staff of life and the principal article of food. One sees every day people on the street carrying on their heads and under their arms great loaves of coarse, dark-colored bread weighing from 6 pounds up; some of the loaves look big enough to weigh 25 pounds. My charwoman — who boards herself — tells me that she, her husband, and their little boy, a lad of ten, eat a 6-pound loaf of bread a day. They have also some cheese, and for drink a something they call piquette. It is made by soaking fresh or dried grapes in water, adding a little brown sugar, and letting it ferment. They also make it of bruised apples and the cores and parings of apples used for other purposes. They have coffee sometimes, meat rarely, and even then the cheaper parts. Vegetables in the summer are abundant and cheap, and form an important part of the bill-of-fare. Roasted chestnuts are also much employed as an article of food. They are extremely economical, wasting nothing, and making everything go as far as it can.

Thus the people live, and I suppose there are few who know any other order of existence who much envy them their lot. It has not always been so here, however. Before the destruction of the vineyards this was one of the most prosperous parts of France. Even now much is hoped for from the investigations of the committee of viticulture, and many vines are now being planted out, some on native and some on American roots. The result remains to be seen.

Food prices in Cognac.

Articles.	Price.		Articles.	Price.	
	Francs.			*Francs.*	
Beef ..... per pound...	1.20	to 1.50	Fish:		
Mutton ..... do.....	1.20	1.40	Fresh ..... per pound...	.90	to 1.00
Pork:			Salt ..... do.....	.60	.70
Fresh ..... per pound...	.70	1.00	Eggs ..... per dozen...	.60	.80
Salt ..... do.....	.70	.75	Rabbits ..... each...	1.25	1.50
Hams, cured ..... do.....	1.50	1.85	White bread ..... per pound...	.75	

Food prices in Cognac—Continued.

Articles.	Price.	Articles.	Price.
	Francs.		*Francs.*
Brown bread ....per pound...	.25	Beans, dry ....per pound...	.30 to .35
Cheese ....do.....	1.20 to 2.00	Peas, dry....do.....	.30 .35
Butter ....do.....	1.20 1.60	Potatoes:	
Lard....do.....	.80 .90	Old....do.....	.05 .10
Milk....per liter...	.20 .25	New ....do.....	.55 .60
Wine, table ....do.....	.60	Cabbage....per head...	.10 .15
Piquette ....do.....	.15	Lettuce ....do.....	.10 .15
Olive-oil ....do.....	1.20 1.40	Onions....per dozen...	.25 .50
Lamp-oil ....do.....	.60	Turnips ....per pound...	.15
Coal-oil ....do.....	.60	Beets ....do.....	.15
Vinegar ....do.....	.50 .60	Radishes ....per bunch...	.15 .20
Candles, common ....per pound...	1.00 1.40	Apples, small....per dozen...	.30 .40
Coffee ....do.....	2.00 2.50	Pears, for cooking....each...	.20 .25
Tea ....do.....	6.00 8.00	Chestnuts....per liter...	.50
Sugar ....do.....	.60	Cauliflower ....each...	.30 .50
Flour ....do.....	.50 .70	Artichokes....do	.30 .40

EDWARD P. EARLE,
Consul.

UNITED STATES CONSULATE,
Cognac, April 7, 1889.

RUSSIAN PETROLEUM IN THE EAST AND COREA'S IMPORT TRADE.

EXTRACT FROM ANNUAL REPORT OF CONSUL BIRCH, OF NAGASAKI.

Kerosene continues to be the principal article of import direct from the United States. Two direct cargoes arrived from Philadelphia, and some reshipped American kerosene reached here from both Shanghai and Yokohama. Deliveries for the year, however, show considerable falling off as compared with those of 1886. This does not mean decreased consumption, but is the result of many places in the surrounding country having drawn their supplies from Kobe, where, owing to competition, prices have ruled lower. Some 15,000 cases have been shipped to Vladiwostock, the neighboring military post in Siberia, during the year, and 10,000 cases to Hakodate. Samples of Russian oil from Batoum have reached this port. The cases and cans are very similar to the American. The oil is water white and called 130° test. It is not at present as well received as the American article, but its friends claim that it will eventually compete with it if it can be laid down in Japan cheaper. The advanced cost of oil in the United States the latter part of the past year will, I fear, make a good opening for the Russian article in both China and Japan, and as, in my estimation, the introduction of Russian oil is a real danger to the import trade of Japan with the United States, I think it proper to quote the following newspaper article relative to the matter which has appeared in the Japan Mail, published in Yokohama:

There recently arrived here the English steamer *Monarch*, which brought to this city from Batoum 536,000 gallons of oil in 67,000 cans. It is the first time that Russian oil has appeared in Japan. It was ordered by Jardine, Matheson & Co., one of the largest English firms doing business in east Asia, through the Commercial and Industrial Company at Baku. The *Monarch* was chartered specially for that purpose. At the very news of the arrival of the Russian oil at Japan the price of American oil fell 5 cents per can. It is believed here that Russian oil will ultimately drive American oil out of Japan, owing to its superiority and to the great influence here of the firm which has undertaken the business. Both English and Japanese papers welcome Russian oil that it may put an end to America's monopoly in this branch of trade in Japan. Jardine, Matheson & Co. are very confident of a profitable sale of this oil, and, as it is reported, even before the *Monarch's* arrival here, they have sent to Batoum another order for still a larger amount of oil.

This news, we are informed, has been received in Russia with great joy. The oil men of Russia hope to ultimately drive American oil from the Old World, leaving only America for the oil men of America.

COREAN TRADE.

A feature of the import trade at this port, which does not figure in the returns, is the trade in certain staples for Corea, such as shirtings, Victoria lawns, drills, etc. The large demand for shirtings in Corea is mostly supplied with Manchester goods, which are simply transshipped here to the steamers plying between this port and the Corean ports, or stored in bond until sold. The demand is for 10 and 11 pound shirtings of full width, 38 and 40 inches. This trade with Corea is now almost entirely in the hands of Japanese merchants, who, however, get their supplies from foreign importers. Victoria lawns in considerable quantities also pass through this port in the same manner during the spring and summer. In my last year's report, I called attention at some length to the fact that, with the exception of drills, the bulk of the import trade to Japan and Corea in textile fabrics was not with the United States. The Corean and Japanese trade take our drills because they are of superior purity and more excellent quality than the drills of other nations trading in these markets, and these are the chief considerations with this class of goods, but they do not like our gray shirtings, lawns, and muslins, although acknowledging their excellent quality, durability, and purity, because they have not the weight, width, and finish the trade demands, a demand which the American manufacturer must recognize if he wishes to compete successfully in the Eastern markets with the manufacturers of Great Britain, Germany, and France. I am sure it would be worth the while of the home manfacturers to turn these requirements into account.

JOHN M. BIRCH,
Consul.

UNITED STATES CONSULATE,
Nagasaki, November 13, 1888.

GERMANY'S GRAIN TRADE.

REPORT BY CONSUL MONAGHAN, OF MANNHEIM.

Germany does not produce enough grain to supply the wants of her own people. She must and does import large quantities. She gets her supply at present partly from the Continent and partly from Russia, Austria-Hungary, India, and America.

Russia and Austria-Hungary do now the largest, in fact almost all the import business on Germany's corn and grain exchanges. The places once filled by American cereals are now being filled by others. Russia is fast taking the lion's share. Even Austria, befriended as she is by a large part of the German people, is yielding rapidly her place to her powerful rival.

Austria sold to Germany more wheat than Russia did previous to 1883, but after that period and for each year Russia has held the lead, in some cases by enormous differences. Russia always led in the sale of rye, but has gone on increasing while Austria has been showing a large falling off. Expressed in percentages, the relation of the two countries to the total and to each other may be seen at a glance.

Year.	Wheat.		Rye.	
	Russia.	Austria.	Russia.	Austria.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
1881	22.7	25	46.4	9.3
1882	31.7	37.8	52.9	11.4
1883	38.8	31.7	57.3	5.2
1884	43.2	11	58.9	2
1885	56.5	8.2	54.7	1.4
1886	51.9	16.1	58.3	0.4
1887	46.8	19.1	65.3	0.8
1888	45.3	36.4	72	1.8

The amount of wheat imported yearly from Russia to Germany went on increasing from year to year till it reached its highest point, 56.5 per cent., or more than one-half the entire amount imported by the Empire in 1885. Since that time there has been a decrease in the percentage.

The import of rye, however, has gone on steadily increasing from 46.4 per cent. in 1881 to 72 per cent. of the entire amount imported in 1888, while the amount of rye imported from Austria has gone down from 11.4 per cent. in 1882 to 1.8 per cent. in 1888.

This state of affairs, say German economists, is all the more worthy of attention, inasmuch as a constant decrease in the export of German products to Russia has been steadily taking place.

A fair exchange of articles manufactured in Germany for the products of Russia's wheat fields is to be struggled for. Better terms might be effected

towards a mutually interesting exchange with Austria than with Russia, for with the former Germany is allied by race and political sympathies, while Russia is regarded as not altogether friendly.

The constant tendency here towards increase of manufacturing industries, resulting more and more in placing Germany in a position where she must depend on the outside world for her grain supply, and the fact that we produce a very large surplus of cereals, and that Germany exports vast quantities of her manufactured wares and wines to the United States is a good reason why we should see to it that Germany takes more than she does of our products as exchange for hers, especially as we produce in superior qualities and surplus quantities articles which she must buy outside—meat and grain. If we had not as good cereals to offer as Russia, Austria, or India, one would not wonder; but I am assured by grain men that ours are, for all purposes, the best. The argument once indulged, that American dealers speculated too much and created uncertainty in prices, can now have but little weight at a time when experience is proving the folly and futility of any one man or set of men trying to control the world's wheat or grain trade. Cheaper methods of transportation and active American agents here speaking German should certainly do much towards regaining lost and acquiring new territory, not only here in Germany but other parts of Europe that now buy from Russia, Austria, or India.

J. C. MONAGHAN,
Consul.

UNITED STATES CONSULATE,
Mannheim, April 5, 1889.

THE OLIVE AND ITS CULTURE.

REPORT OF CONSUL HATHAWAY, OF NICE.

INTRODUCTORY.

I have the honor to submit the following report on the olive, as it has come under my observation within the district of this consulate, accompanied by some statistical data relating to its products, and accurate directions, obtained by diligent inquiry from reliable sources, for its successful cultivation.

This tree, of the family *Oleaceæ*, which is a feature of the remotest historic landscapes, finds its natural home in the portions of southern Europe bordering immediately upon the Mediterranean basin. Here, restrained only by the choice of man and the limitations of soil and altitude, it covers the slopes, hill-sides, and valleys by millions. The general configuration of the coasts, the mountain barriers, sheltering against northern winds, and the proximity of the sea itself, which serves as a vast reflector of the sunbeams, are explanatory of this result.

It attains to a height usually of 20 feet, and to even 50 feet in some localities, and commonly to an age that appears almost fabulous. One of this species—a wonder of its neighborhood—lately carelessly destroyed at Beau-

lieu, in this vicinity, had a positive record of five centuries, and measured 36 feet in circumference when it fell. It has entire evergreen, lanceolate leaves, gray underneath, and its flowers, which appear in June, are white and disposed in axillary branches, and resemble the blossoms of the elder. Its fruit, named olive, is exceedingly prolific under culture, and is oval in shape, with a ligneous kernal inclosing a seed in form like the almond. The flesh of the fruit yields about 70 per cent. of its weight in oil, and is firm and covered with a soft skin, green colored before maturity, becoming an intense violet black when ripe.

VARIETIES OF OLIVES.

Among the varieties of olives here I note the following:

(1) The black point, called in the dialect of Nice "Prince Neri." This is the best quality of the fruit known in this district, and is grown at Beaulieu and at the promontory of St. Jean. These olives are gathered when entirely ripe, are then dried in the sun, and are excellent for the table.

(2) The "Pitcholine" and the "Caillette" (so-called), both of which are esteemed best for preserving when gathered green.

(3) The "Blanquette" (light of color), the "Sauvagette" (wild olive), and the "Nostrala" (proper olive of Nice), all especially useful in production of oil.

AMOUNT OF PRODUCTION.

It is computed that the amount of oil produced in Italy is 33,000,000 and in France 7,000,000 gallons annually. The amount of production in this department, although no statistics thereof are published, may be safely estimated at from 50,000,000 to 60,000,000 pounds biennially. This estimate does not include the very considerable quantity arriving here from Tuscany and Naples, nor the increasing importations to this port from Corsica, all adding to the immense stock of the refiners here, and from hence, in the distributions of commerce, sold in Europe and America under the name of "Olive Oil of Nice."

CONDITIONS OF VEGETATION, ETC.

The tree does not vegetate readily beyond 2,000 feet above sea-level or 45° in latitude. The department of Alpes Maritimes, situated 43° 42′ north latitude and 4° 56′ longitude east from the meridian of Paris, is most favorably adapted to its growth. The said department has an extent of 46,850 hectares of land (115,770 acres), more or less wooded with the olive, of which 12,000 hectares (29,650 acres) are exclusively planted with olive trees. From the River Var up to the River Roya the hill-sides and valleys surrounding this region are sheltered against northern winds by the "contreforts" of the Alps.

The coasts facing the sun, the immense mirror of the Mediterranean reflecting back the sunbeams and the triple girdle of mountains, gradually sloping into hills toward the sea and protecting the country from frost, are

the unsurpassed conditions, with the temperature, for the nurture of the olive and the maturity of its fruit. Nowhere is the earth blessed with a continuance of more polarized light. The temperature during the winter months, in which the olive ripens, is like that of spring in middle France. The winter is deemed exceedingly rigorous when the thermometer falls below 32° F Thirty years of accurate observation have proved that of the fifty-six days of rain during the year forty-two were in autumn. October and November are the months in which the psychrometer gives the highest average. In May the temperature averages 64°, in June 70°, and the strong heats of July and August 78° F.

During six months, viz, from the close of May to the end of November, more than one hundred days are enjoyed without clouds. The winter temperature on the whole, in the shade, averages 52°. The years when it falls below 32° are rare but ruinous. Such an exceptional climate generally allows the fruit in winter to reach its full maturity. The tree grows everywhere here, except in marl or clay or other moist conditions, but best in a dry soil, on slopes toward the sun, sufficiently sheltered. On steep declivities, where quantity and quality of oil are only aimed at, no crop of any kind is allowed beneath its foliage, but elsewhere and in plains a mixed cultivation is profitably employed. In prosperous seasons the olive is more remunerative than corn or the vine.

FRUIT GATHERING AND OIL MANUFACTURE.

The gathering of the crop begins in November and continues until May The harvest is divided into three periods of two months each From the first is produced an oil high-colored and called "fine," the second produces a straw-colored oil called "superfine," the last a pale-colored oil called "extra superfine." The product of the first period is most dense and has a stronger flavor of the fruit, and can be longest preserved. But the best quality of the oil is that from the last gatherings of April and May, when the fruit has become fully ripened. This, although less flavored than the others mentioned, has more sweetness and limpidity, and is in great demand in the home markets and not always easily procured for export in its finest grades.

To express the oil from ripe fruit freshly gathered and unmixed with that which is immature or otherwise of bad condition is an essential rule, and to this method the reputation of the oil of Nice is mainly due. The olive is gathered from small trees by hand, and from large ones it is knocked off with poles. The first manner is preferable, as the fruit thus escapes being bruised and as any lengthy contact with the soil affects its flavor. But this can not so readily be practiced either on large trees or slopes or fields of large extent. Women and boys are employed for the purpose, for which as wages they receive 77 cents for every 20 liters.

The mills for grinding the olives are located on the little water-courses of the region, and a stone wheeling round on its axle triturates the fruit and reduces it to a paste. The latter is then placed in bags of esparto and

squeezed under a press in the mill. The olive oil then escapes through the texture of the bags and runs into a receptacle underneath. It is this first pressure which produces that which is styled "virgin oil." Afterwards the bags of said paste are removed and soaked in boiling water and placed a second time under the press. The same operation is a third time renewed, when all the oil is extracted. The second pressing yields the ordinary oil of commerce, and the third that used for illuminating purposes and generally consumed here in preference to all other oils. It is styled "huile de colza."

The farmers bring their oil to market in barrels of about 200 pounds weight, or retain it in their cellars in earthen jars, glazed within, and guarded from dust by wooden covers. Merchants keep it in large, deep, cemented tanks, over which their warehouses are built, thus providing an even temperature.

From these tanks the oil is drawn by pumps for the process of filtration and bottling for sale. The filter consists of a series of boxes, one above the other, with perforated bottoms, and lined with layers, about an inch in thickness, of white cotton wool.

ADULTERATION OF OIL.

That the adulteration of the olive oil, notwithstanding the severe penalties of law therefor, is to some extent practiced is undoubted. The fraud is accomplished by mixing with the genuine the oil of the oleaginous seeds of cotton, sesamum, and others Immediate discovery of the imposition appears impossible, although much study has been given to the matter. Densities, degree of congelation, refraction, specific weight, and all other chemical properties must be taken into consideration, which is a labor of hours. The following process of detection is generally used: In the trial tube is placed 0.3086 grains of dried albumen, to which is added 30.864 grains of nitric acid, and an equal weight of oil. The tube is then heated over an alcohol lamp and its contents mixed by ebulition. The operation affords the following tests. (1) If the oil be genuine olive the color will be of a yellow feebly greenish tint; (2) if the olive has been mixed with 5 per cent. of seed oil the color will be of an amber yellow tint, (3) the tint of the mixture will deepen down to a deep orange in proportion to the amount of the foreign oil.

DANGERS TO WHICH THE OLIVE IS LIABLE.

The special dangers to which the olive trees are exposed are frost, wind, hail, and the "dacus." When a tree has been caught by too low a temperature it seldom resists the frost. The loss in Provence from this cause, in the year 1830, was ruinous to many proprietors, and amounted to 4,000,000 francs. When the tree is but partially frozen it can be saved by pruning, but when leaves and branches are entirely frozen there is no remedy. A violent wind brings down the fruit pell-mell, ripe or green, according to the season. The hail cuts and bruises it as well as beats it from the branches. Such fruit becomes mingled with soil and more or less decayed, and produces

an oil moldy in savor, disagreeable to the taste, and improper to trade. The dacus, the chief enemy of the olive, appears in the month of August, as soon as the fruit begins to ripen. This little insect destroys annually more than 3,000,000 francs' worth of olives. Its larva, introduced into the flower of the fruit in the form of an almost imperceptible egg, hatches in the fruit and is nourished by its substance. In September the larva, becoming a perfect insect, issues from the olive, cutting and weakening the little stem which joins the fruit to the branch. The fruit, when this happens, soon falls in a spoiled and unripe condition, and the oil it produces is rancid to the taste and only valuable for the lamp.

DISEASES OF THE OLIVE.

The olive tree does not escape from vegetable parasites. A tree infected with morplua or fumago becomes all black—trunk, branches, and leaves. If it produces fruit, which rarely occurs, such contain no oil. This disease once fastened, lasts about ten years, and it is without a known remedy. Severe pruning in such cases is sometimes practiced, but it is usual to leave recovery to the operation of time. Twenty years ago this disease wasted many groves in the environs of Grasse and at Beaulieu, but finally disappeared. Recently the environs of Cette have been afflicted with that sickness. Some proprietors said it resulted from the fog, others ascribed it to emanations of the soil, and others to the wind from the sea. M. Aug. Riviére, an expert in such matters, is of opinion that the disease develops from the honey matter deposited under the leaves by the insects *Aphis coccus* or *Kermes*. Among the numerous remedies for the scourge have been hyposulphite of lime, petroleum, and fumigations of tar, all of which, however, have been found useless. The same disease occurs among the trees in Spain, under the name of *negruro*.

Secondly, the decay of the olive. Among trees not too thickly planted and on lean, dry soils this seldom occurs, but elsewhere is quite noticeable. The decay arises, for the most part, from the cuttings, the breakings, and the bruises to which the tree is subjected. The wounds thus made, unless protected from the air, cause the ligneous substance to become rotten. This disease proceeds, undoubtedly, to a large extent from the method in which many of the young plants are obtained. These, when extracted with a few horizontal roots from the foot of the parent tree, leave injuries inviting decay. The treatment for the trouble consists in removing the decayed portions as much as possible, and closing the cavities with mortar of sand and lime.

COST AND PROFITS OF PRODUCTION.

On slopes or undulating fields 1 hectare of land (2.47 acres) usually contains about 200 olive trees; on plains about 150. To calculate as exactly as possible both the expense and yield in this district, I will make an average of both situations, observing, at the outset, that the crop is biennial, and that in the estimates of expenses, therefore, only one-half is to be taken.

To cultivate a hectare on plains it is necessary to dig and loosen the soil, a labor of fifty days at 48 cents per day, one-half of which sum is $12.06; to manure the same (150 trees at 14.4 cents each), $21.71; to prune the same, at 19.3 cents per tree (the half), $14.48. Each tree gives, on an average, 3 double decaliters of fruit, equal to 13½ gallons; for the gathering of each double decaliter 77 cents is paid; one-half of this expense for the 150 trees equals $17.37. The entire expense per hectare thus equals $65.62.

One hectare of olive trees under good conditions produces every two years 450 double decaliters of olives, which, at the normal price of 3 francs each (58 cents), are of the value of $260.35. One-half of said sum being regarded as the product of one year, the proprietor thus obtains 675 francs, equal to $130.17,5, from each hectare. Deducting the above expenses therefrom leaves him a net profit of $64.65 per hectare. On slopes, with 200 trees per hectare, $90.44 of value would be the annual product. An average of $77.55 is the net profit annually per hectare for both locations. Thus, the 46,850 hectares of olive lands in this department, of which about 31,000, it is calculated, are planted in slopes, may produce the important sum of $3,830,000 yearly.

Among the principal oil merchants at Nice are "Societé des huiles d'olive," Stable & Cie., and Joseph Mayrarque. Prices for table oil range from 2.50 francs to 1.90 francs, and illuminating oil from 1.10 francs to 0.80 francs per liter (2.113 pints).

OLIVE TREE CULTURE.

The "Oleaster" (wild olive) and "Olea Europæa" (common olive) grow without cultivation, but the quantity and quality of their fruits are to a great extent the result of care and labor. When totally neglected the tree does not entirely fail, but, like the vine under the same conditions, brings some small profit to the owner, but the product always increases in proportion to the amount expended in its judicious care.

One of the primary essentials, as considered by the best cultivators here, is that the ground under its shadow be plowed, dug, or otherwise loosened thrice every year, great care being taken lest the roots are wounded. A breaking of the soil to a depth of 10 inches is thought sufficient. On the plains they use the plow, but upon the declivities the spade only is practicable.

SOIL.

It is generally allowed that a soil in which more or less lime, alumina, magnesia, silica, and some alkaline salts exist is especially favorable to this tree. Volcanic soils are also considered excellent, but neither of the above, though preferable here, excludes all other soils, except those which are mortal to the olive, viz, fat and very moist lands and sandy and very dry ones. Excessive moisture and excessive dryness are its enemies. Soils entirely of clay or sand are excluded from its culture, but the sandy clayey ones, the calcareous, the rocky or pebble-covered, and even the calcareous rocks themselves, where the roots can penetrate between them and find water to suc-

cessfully nourish the tree are adapted to its culture. A soil not too dry, the bottom of which is gravel, provided clay is found over it mixed with sand, is preferable. A clayey soil is bad on account of the moisture with which it is filled in winter, and which causes the roots to decay.

SITUATION.

The proper situation of the tree is a question simply of temperature. Much attention must be directed in various ways to situation, as it involves a careful consideration of climates, altitudes, declivity, and the direction of predominant winds. Many different conditions thus present themselves, which may be summed up as follows: Give the tree the maximum of temperature which its nature requires, avoiding places of excessive cold as well as those of burning heat. For this end, in cold localities the trees should be placed on meridional hills and on septentrional ones in very hot localities. Further, light slopes are always preferable to high hills or the valleys.

REPRODUCTION OF THE OLIVE TREE.

The methods for the reproduction of the olive are numerous but may be treated as under two distinct classes, viz, the natural and the artificial. The best natural way of reproducing the tree is from the seedling. The seed requires two years for germination when sowed in its hard kernel. The latter should always be crushed, therefore, but without injury to the seed, which will then follow the ordinary rule of development. Some cultivators, after removing the kernel, soak the seed in a mixture of manure and clay. When planted the best dry soil should be selected and the seed covered to a depth of 2 inches. If sowed in April, the young plant will emerge the same year, and in six or seven years bear fruit. In its first stages it should be protected by straw or leaves against the cold, and its lateral branches pruned away and its stem guarded by an inclosing support.

Among the artificial means of reproduction are the following: The planting of shoots, multiplication by protuberances bearing buds, and multiplication by cuttings and grafting of the stumps. The artificial methods, however, do not afford the special advantages of the seeding process, which are: A more vigorous tree, producing longer and more regularly; one of more hardihood, more readily existing on moist, arid, or rocky soils; a tree with more abundant roots, by which it can offer greater resistance to wind and cold, as well as obtain more nourishment; a better form of tree than simply portions of others, the wounds of which heal with difficulty and are frequently the source of decay. The seedling process is, therefore, most advised and most adopted.

THE NURSERY.

The formation of the nursery for the young olive is of great importance, and is a special and very profitable industry. The soil for this purpose should not be either too clayey or too silicious, too dry or moist, should be well mellowed and on a slope of southern inclination. The land selected is here plowed or dug to a depth of 2 feet in November or December, and thus left

until spring to the operation of rain and frost. A second breaking of the soil by spading, less deep than the preceding, in April, completes the dispositions required for the reception of the seedlings, the young wild olives, the rooted cuttings, and the shoots.

Inasmuch as these plants when placed are intended to remain at least seven years, they are generally planted a distance of 3 feet apart. The first care taken, after the roots are developed, is to form the trunk of the future tree by careful lopping of the plant's lateral branches. This process is continued for about five years. At the end of the fifth year is the period to determine the height desirable for the tree to attain. The height preferred depends upon the species, but more upon the locality and nature of the soil to which it is to be transplanted. If destined to deep and rich soils, a trunk of 4 to 5 feet in height is best; but if for a lean soil, or a place exposed to winds, then 3 to 4 feet is sufficient. Soon after its fifth year comes the time for forming the head of the tree, to which is given sometimes the form of a truncated cone, of a vase, of a fan, a sphere, or pyramid, the object being always to allow it to present as much surface to the sun as possible. The result is reached only by the labor of years.

OLIVE PLANTATIONS.

In the transplantation the plants are placed about 4 inches deeper than in the nursery, and in lines from north to south, with a space between each tree of from 25 to 30 feet, as the tree will not be fruitful unless well exposed to the sun. The rule in that regard here is as follows: Plant the trees on right lines from north to south, with such a distance in the alleys between them that the tree to the south shall not cast its shadows on its neighbor to the north on the day of the equinox, the 22d day of March, at noon.

When the soil is dry the plants are transplanted in the autumn, and in moist soils in the spring, care then being taken that they be placed in the same position toward the sun as they had in the nursery. A bed of straw is provided at the foot and a circular gutter to retain the rain in summer. The soil covering the roots contains some fertilizer, such as pulverized bones or ordinary dung.

PRUNING.

It is an ancient saying here that by planting the olive you pray it to give you fruit; if you manure it, you not only pray it but you entreat; but by pruning you compel it to do so. To this end all dead wood is cut out, and those branches which prevent air and light reaching the center of the tree. The height is also thus reduced when detracting from the vigor of the lower branches, and rendering at the same time more difficult the gathering of the fruit. A regular pruning of young plants, however, should not commence until the fifth or sixth year after transplantation.

At Nice the trees are pruned every two years, in the spring. In autumn the wounds have no time to heal before cold weather, but in the first case there is also danger — loss of sap. On examining more closely the rules for

olive pruning it should be remarked that these should correspond to the mode of growth of the tree itself. Young branches present themselves opposite each other on the most vigorous branches, and are only productive of wood; others produce knobs for flowers all along their length, which expand in branches in the spring of the second year. Each of these small branches develop two lateral shoots; these new shoots fructify in the following spring, and so on. It will be remembered that the olive fruit grows only on the branches which are two years old.

If the new shoots were developed yearly without accident, the tree would annually produce its fruit, but in the years of abundance the sap is drawn to the nourishment of the fruit, and hence the number of young sprouts is restricted and the ability of fructification for the following year. Hence, also, it will be understood that one object of pruning must be to favor the birth of the young lateral shoots, either by arresting the terminal development or suppressing the smaller branches. The small and more perpendicular branches are more abundant, but the horizontal or hanging ones are the most productive. The skilled cultivator directs the pruning of his plantation in such a manner that one-half of it fructifies one year and the other half the next year.

The height of the tree here averages about 21 feet, yet there are trees in the neighborhood 56 feet in height and at the base 22 feet in circumference. Neither Greece nor Palestine could boast such trees.

MANURES.

The fertilizers devoted to this tree are numerous. These may consist of its leaves, unutilized otherwise, residues of its oil, oil-cakes, and the refuse of animals, the refuse of skins, horns, feathers, woolen rags, and guano. Those decomposing slowly, as horns, rags, etc., are applied in autumn, in the spring those dissolving less slowly. At the period of fruitage strong manures are used which act immediately. The manure is placed away from the trunk and over the absorbent mouths of the extremities of the roots. It is usually disposed here in a ditch about 2 feet deep, encompassing the tree, and then buried. Slight but frequent applications are best, but it is usually practiced only once a year.

GRAFTING.

The usual methods of grafting can be applied to the olive. The following, however, are used in this district: (1) The "eye-bud" or "ring" graft, the latter being a variety of the former; (2) the cleft graft, preferred in Nice.

In nurseries the eye-bud is practiced, but the cleft only on older trees in the field. Cultivated and wild olives both are grafted.

To make an eye-bud graft, a furrow in the form of a T is cut through the bark of the trunk to be grafted, and in this a bud from a cultivated olive is inserted by raising the corners of the middle of said T; the graft is then plastered with mud and covered with a rag, fastened with twine.

The cleft graft is formed from shoots or cuttings instead of buds. The branch to be grafted is cut squarely off and the stump split by the knife. Into the cleft one or more shoots, previously sharpened in wedge shape, are then inserted, care being taken that the bark of each shoot adheres to the incision; the interstices are then filled with paper or fine straw, and the place grafted is covered with moist clay and bound with a bit of cloth.

The grafts will not produce the olive until three years, and do not attain their full yield until nine years after grafting. From said period a tree 1 foot in diameter will produce, on an average, 34 pounds; a tree of 2 feet, 112 pounds; and one of 3 feet, 200 pounds of olives per annum.

ALBERT N. HATHAWAY,
Consul.

UNITED STATES CONSULATE,
Nice, March 25, 1889.

TOBACCO IN GERMANY.

REPORT BY CONSUL-GENERAL RAINE, OF BERLIN.

The last issue of the Monthly Journal of German Statistics contains an interesting publication regarding tobacco taxation, imports and exports of raw and manufactured tobacco, as well as a statement of the receipt of tobacco taxes and duties during the harvest year July 1, 1887, to June 30, 1888, as compared with the harvest year from July 1, 1886, to June 30, 1887.

According to said publication, 21,466 hectares* were devoted to tobacco culture during the year 1887 within the limits of the German customs union, against 19,843 in 1886, or, in the average during the last ten years (1878–'87), 21,304. The extent of tobacco culture has increased during the last three years, chiefly owing to the fact that, in most of the districts in question, the prices paid for the crop of 1886 showed an improvement, encouraging the hope that the retroactive tendency of prices had reached its limit.

The crop of dry (house-cured) tobacco in 1887 reached 40,866 tons of 2,220 pounds each, or averaging 19 double centners,† against 19.4 per hectare in 1886, 19.7 in 1885, 22.4 in 1884, and 19.3 from 1878 to 1887.

The results of the harvest have been, particularly as regards the quality of the tobacco raised, very inferior in most of the districts, for the reason that the culture and growth of the plants were much impeded in the spring by drought, and in the fall, in many districts, by night frosts, necessitating, in many cases, the gathering of the crop before the plants had fully ripened.

The gross receipts of the crop of 1887, after deducting taxes, show 13,700,000 marks,‡ against 16,500,000 marks in 1886 and 18,600,000 marks as the average for the last ten years; or, per hectare, on the average, 638 marks in 1887, against 830 marks in 1886 and 870 marks on the average for ten years.

*1 hectare = 2.471 acres. †1 double centner = 220.48 pounds. ‡1 mark = 23.8 cents.

The tobacco import in 1878–'79 was unusually large (the value of import of raw and manufactured tobacco reaching 141,700,000 marks), attributable chiefly to the expected increase of duties, while in the year following the value receded to 21,700,000, but afterwards increasing, and it is now expected to reach, for 1887–'88, 73,500,000 marks.

The export of raw and manufactured tobacco from the customs union was but small, and in 1887–'88 more limited than in previous years; 1887–'88, 4,400,000 marks; 1886–'87, 5,400,000 marks; 1885–'86, 8,800,000 marks, and from 1878 to 1880 averaging 7,000,000 marks.

The proceeds of taxes on tobacco, including 26,979 marks for tobacco surrogates, reached, in 1887–'88, after deducting drawbacks, 11,076,484 marks, and, adding thereto duties for foreign tobacco, 37,071,339 marks, deducting export bounties, 390,740 marks, left the net amount 47,757,083 marks, showing an average of 1.01 marks per head of population, against 0.95 in 1885–'86, and 0.75 from 1878–'79 to 1887–'88.

A careful compilation of the amount of tobacco consumed in each year is embarrassed by the circumstance that the stock of tobacco on hand and going over, to a greater or lesser extent, from one year to another can not be estimated. For a more extended period, however, the stock on hand can be ascertained, and in this sense it is calculated that the consumption of raw tobacco (intended for smoking, chewing, etc.) per head of population reached, within the customs union, in 1861–'65, 1.31 kilograms; 1866–'70, 1.33 kilograms; 1871–'72 to 1875–'76, 1.84 kilograms; 1876–'77 to 1880–'81, 1.71 kilograms; 1881–'82 to 1885–'86, 1.39 kilograms, and 1886–'87 to 1887–'88, about 1.52 kilograms.

Tobacco is at present brought, to a limited extent, from Kameroon, the African colony, to Germany and used for manufacturing purposes.

F. RAINE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, March 9, 1889.

TEA TRADE OF CHINA.

REPORT BY MINISTER DENBY.

I have the honor to inclose herewith a copy of the report of Sir Robert Hart, inspector-general of customs, to the Tsung-li Yamên, on the tea trade of China.

The subject of the depreciation in the quality of this staple has attracted wide-spread attention. The inspector-general gives a résumé of the reports that have been made to him by his subordinates. A general cry of distress has been raised in China, which does not seem to be borne out by the facts. In 1885 the shipments were double those in 1865, and in 1886 they were the highest ever known. The year 1887 fell to the level of 1884, as 1883 fell to that of 1877, but such fluctuations are not uncommon in other articles. But

as compared with Japanese and Indian teas the falling off is remarkable. The demand for China teas does not increase, while that for its rivals has gone by bounds and leaps. In 1865 China supplied 97 per cent. of the English consumption and India only 3 per cent. In 1887 India contributed as much as China. The inspector-general suggests one reason for this change in the fact that the Russian trade has been drawn away from London and now goes direct from Hankow and Tien-Tsin to Russia.

Great stress is laid on the bad management of China tea through reckless picking and ignorant treatment afterwards. Various remedies are suggested, one of which is the establishment of a model tea farm.

It will be noted that the inspector-general does not agree that taxation has anything to do with the question. He does not propose a reduction of the customs dues, export or import, but he does suggest the removal of a certain tax named the "Shan-li" or "hill-tax." His recommendations should be read *in extenso*.

CHARLES DENBY.
Minister.

UNITED STATES LEGATION,
Peking, April 2, 1889.

THE INSPECTOR-GENERAL'S REPORT.

[Inclosure in Minister Denby's report.]

PEKING, *August 31, 1888.*

(1) In 1885 and again in 1887 I submitted my views respecting the increasing demand for Indian tea, the deterioration of Chinese tea, and the suggestions that had been made regarding preparation and taxation; and having received the Yamên's order to instruct the commissioners of customs at the ports concerned to examine and report, I directed them to do so by my circular No. 387 of the 30th August, 1887. The replies of the commissioners at Hankow, Kiu-Kiang, Woo-Hoo, Shanghai, Ning-Po, Tamsui, Foo-Chow, Amoy, and Canton have arrived. That there are faults of preparation to be remedied, and that taxation ought to be reconsidered, is the general result of their inquiries. After a careful examination and comparison of what the commissioners write from their several local stand-points, I have now the honor to submit this report for the Yamên's consideration.

(2) Not only is China the native place of tea, but Chinese tea is superior in flavor to all other teas; and yet, although the export of Chinese tea has gone on increasing, a large proportion of the increasing number of tea-drinkers in England take Indian instead of China's black teas, and in America take Japanese instead of China's green teas. The cause of this is not that the raw product — the leaf — has deteriorated in China, but rather because India and Japan take so much greater pains to prepare their teas well that not only do the teas keep without changing, but they can be sold cheaper than Chinese teas — so well, too, do their painstaking producers know how to save wisely. China's failure to take the same pains is partly because of the old reason — it was always so — and partly because falling prices have disheartened producers: old conditions are, in fact, beaten by new methods. Thus the result is that every new advance gives competitors an additional hold on the market; and although China's export trade has not yet fallen off, it is widely asserted that in time it must cease to exist. That other teas should be sold cheaper is explained in two ways:

(*a*) *China's teas are more heavily taxed.*— Although all teas pay the same import duty at their destination, they are differently taxed on departure; *e. g.*, while Japanese teas pay only a fourth of what Chinese pay, Indian teas pay no export duty whatever.

(*b*) *India's teas are more economically prepared.*— In India the work of a large plantation is managed by one head from first to last, but it is not so in China. Tea-growers on the hill-side own only a few shrubs each, the pickers sell to the collectors, the collectors to Chinese traders, and the latter, again to foreign merchants. Thus expenses are greater and tea therefore dearer.

(3) The merchants' recommendations are that taxation ought to be reconsidered and defects remedied, but they are not all in accord respecting taxation. Some assert that if likin and duties are not entirely repealed, the tea trade will be destroyed, while others are of opinion that to lighten taxation will be of no advantage to trade. A comparison of these views shows that while to lighten taxation would be of certain and immediate disadvantage to revenue, to do so would be, at best, of but uncertain advantage to trade. In the case of the Indian competition, for example, Indian tea can be sold in England, and at a profit, for about 6*d.* a pound, whereas Chinese tea can not even be sold for a profit for 9*d.*; therefore, supposing the tax on Chinese tea, viz, about 2*d.* a pound, entirely abolished, Indian tea would still undersell it 1*d.* a pound. I am therefore of opinion that it is useless to touch either export duty or ordinary likin. But the Hankow commissioner suggests that a certain tax named the "Shan-li" or "hill-tax," collected from the owners of the tea plants, might be remitted with advantage. It amounts to 760 cash, or 0.4.6.0 taels a picul, and its removal would encourage peasant growers and help them to take more care of their plants. I think it would be well to give effect to this suggestion. National revenue will not feel the loss, and the abolition of the tax will encourage that carefulness in tending the plant which is demanded at the very starting-point of any effective attempt to remove defects.

The opinion just expressed about taxation refers mainly to the black teas which go to England. As regards the green teas which go to America, the Amoy merchants point out that during the last ten years, although Chinese green teas have not gone forward in less quantity, there has been no increase; while, on the other hand, Japanese teas have increased during the same period from 25,000,000 pounds to 42,000,000 pounds. The Japanese duty on tea, they say, is only $1 a picul, while the Chinese amounts to as much as 34 per cent. ad valorem; and they add that if the Chinese duty were made something like the Japanese, or, say, about 7½ per cent. ad valorem, the Chinese green teas they refer to would be sold in greater quantities. The merchants are presumably quite right in their statistics, but as to the change they propose in the duty, I think the consideration of it may be deferred without danger, although I do not deny that it might result in larger sales.

(4) As regards what merchants allege respecting defects to be eradicated, British merchants point out that less tea is sold in London than formerly, and explain that the cause of that is deterioration in quality. It does not appear to me that this explanation can be accepted. Changes have taken place in the trade; for instance, the Russians used to buy in London, but now buy in Hankow, and the result of the opening up of a sea route is not only that tea goes to Russia direct, instead of through London, but Russian buyers competing for tea have raised prices at Hankow and, disappearing from competition, have brought down prices in London, and thus English merchants, buying in a rising market while they send their tea to be sold in a falling one, naturally find also that their business is not what it was; but this falling off in quantity and its attendant badness of business result not so much from any deterioration in the quality of tea as from changes in the trade. Less tea arrives — less tea passes through England; but the cause of that is not that Chinese taxation is too heavy or that Chinese tea has deteriorated. And it must be remembered too, that although a less quantity passes through England, the total quantity which leaves China has gone on increasing, and can not yet be said to be decreasing.

(5) Quality, however, is a very important factor, and all that is said about it merits serious consideration. Although quality necessarily differs from year to year and with the producing localities, it is nevertheless true that preparation has much to do with it; care in preparation may possibly convert indifferent material into reasonably good tea, but carelessness will as-

surely spoil the very best leaf. Comparing the tea of present and former times, the defects the merchants complain of are these:

(*a*) Too long an interval is allowed to elapse between picking and firing; the firing is inadequate; and while the tea is deficient in strength and loses its flavor it also does not keep.

(*b*) Spoiled leaves are not rejected but are packed with the good, and the consequence is that the good are also damaged. Too much dust is put in each box, and the whole is sometimes further adulterated by the intermixture of the leaves of other plants.

(*c*) The boxes in which tea is packed are not strong enough or well enough made for its protection.

(*d*) The tea when delivered is often not up to muster.

(6) The remedies recommended are as follows:

(*a*) There ought to be a sufficient depth of soil where the tea shrub is planted, and the ground ought to be weeded and manured.

(*b*) The tea shrub ought to be well cared for; pruning ought not to be neglected; aged shrubs ought to be removed, and young ones planted instead.

(*c*) All the leaves should not be removed from the same shrub at the same time, but only such as are ready for gathering. The leaves which are ready ought to be picked from all the trees in the plantation at the same time, and each picking ought to form a separate chop. The leaf ought not to be picked too soon or too late — although a ten days' overgrowth gives an increase of 25 per cent. in weight, it causes a decrease of 35 per cent. in value. In India there are as many as 16 pickings; that is, each shrub contributes to 16 chops.

(*d*) After the leaves are picked, the subsequent processes — withering, rolling, fermentation, firing — ought to be at once proceeded with. The greatest care should be exercised at each step, and the leaf ought to be well protected from the weather, especially just after picking and while awaiting the other processes.

(*e*) The inner and outer cases in which tea is packed ought to be more solidly made and more securely closed.

(*f*) Musters ought not to be sent on ahead of the chops.

In this connection merchants add that Indian tea owes its success to the fact that the exact and faithful performance of all that these recommendations involve is there the rule, and that this is easy for India, where a single tea plantation means thousands of shrubs on the same plot, where picking, withering, rolling, firing, packing, and dispatching are all proceeded with at once and under the same supervision and management, and whence the teas are forwarded to and sold in the London market, so that proper attention is given to each leaf at each stage, and while the tea produced is first-class tea, expenses are reduced to a minimum — only one profit is looked for, and consumers can purchase cheaply; whereas in China it is just the opposite that takes place, and the result is inferiority of quality and elevation of price.

The merchants further recommend the appointment of a joint commission of intelligent experts to spend one season in Chinese tea districts and another among Indian tea plantations to study in person the processes, practices, and customs of each, and, after a proper comparison, advise as to what China ought to change, or drop, or adopt.

It is also recommended that China should either open a tea school or establish a model plantation, or place a given tea district under the supervision of properly appointed Government experts, or charter a company to conduct the business of a tea plantation on the Indian plan. I am of opinion that any or all of these would be beneficial to both trade and commodity. The idea is, of course, to provide a fitting pattern for all to study and imitate. In this connection the attention of the Yamên is more especially requested for Mr. Hannen's dispatch, Foo-Chow, No. 588, and Mr. Chalmers' dispatch, Tamsui, No. 326, regarding the establishment of model plantations at Pakling and Tamsui.

(7) In conclusion, it is evident that there are causes for the representations put forward by merchants; nor am I the only one who has called attention to them. In the Peking Gazette I have noted what the viceroy of the Min-Chê provinces said about the collapse of the tea markets

in a memorial to the Emperor, and also what the viceroy of the Two Kiang afterwards said in another memorial about the success and cheapness of Indian and Japanese teas and losses of Chinese merchants, and how the likin had been slightly reduced in consequence, in the hope of benefiting an industry of so much importance to China and the Chinese. An evil so widely known and recognized ought, of course, to be cured. It is true that at the start China alone produced tea, and everybody bought from China, and that while the ever-growing populations of Russia, America, and the Pacific prefer Chinese tea and scarcely touch Indian, even England does not yet take less, although latterly buying more and more Indian tea; in fact, so many places want Chinese tea that no matter what quantity is produced there is but little fear of its not finding a market. And, moreover, Indian tea, although possessing the good quality of strength, is now pronounced to be in some way harmful, while Chinese tea is not harmful, and, although not so strong, possesses in a high degree another excellent quality — flavor — in which Indian teas are deficient; as long as teas possess this flavor they will find purchasers. Accordingly, the important point to attend to is flavor; growers must take care of their plants and keep them in good condition, and those who conduct the various processes which fit the leaf for use must exercise the utmost care at every step to insure that the tea will keep and that its flavor will not be lost. The hill tax apart — which ought to be repealed for the encouragement of growers — I do not consider that any good will attend the reduction of ordinary likin and export duty; but there is unquestionably room for improvement in every step and every process in growing and preparing tea, and it is most important that whatever can be done shall be done.

WOOLEN TRADE OF THE DISTRICT OF ROUEN.

REPORT BY CONSUL WILLIAMS.

The manufacture of new patterns, recommenced and continued throughout the month of March, received a partial check during the months of January and February on account of the sudden extremely wintry aspect of the weather. Manufacturers seem to think that unless political events interfere with the general business outlook, the season bids fair to be very profitable.

The condition of trade in black and colored cloths and those used by the Government remains unchanged and in a healthy condition. Elbeuf sent out 381,837 kilograms * against 379,397 during the month of March, 1888.

Foreign orders arrive regularly, and are steadily on the increase. The manufacture of thin cloth for ladies' wear is rapidly increasing, and can be attributed to the care taken in its manufacture and, above all, the delicate shading of the colors of these goods.

The shipments from Elbeuf during the first quarter of this year were 1,179,659 kilograms against 1,249,257 during the same period of 1888, and 1,200,057 in 1887.

In Fourmies important transactions in combed wool have taken place in the last fifteen days, at an advance of 20 to 25 centimes. In spite of the resumption of twelve hours per working day the spinners have not been able to fully supply the weavers, and yarn has slightly advanced and is now about 1.20 to 1.25 francs for warp and 1.30 to 1.35 for woof. The spinners have orders for two months ahead. This scarcity has caused an advance of 3 to 5

* 1 kilogram = 2.205 pounds.

per cent. The increased demand for merinos and plaids has encouraged the manufacturers to advance the price, which, they affirm, is disproportionate to the price of the raw material and the yarn. It must be borne in mind that the spinning and weaving are almost invariably carried on separately in France. At Rheims spinning is active. Merinos and cashmeres are in request, especially for exportation.

Flannels are firm, at a slight advance. The new patterns are in great demand. The following table indicates the transactions in wool of the five great wool centers of the north of France during the month of March of this year, compared with those of the corresponding period of the year 1888:

Centers.	Combed wool.		Spun wool.	
	1888.	1889.	1888.	1889.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
Rheims	871,784	1,052,440	51,361	76,381
Roubaix	2,122,975	2,827,550	293,747	392,354
Tourcoing	1,731,908	1,663,693	293,807	308,640
Amiens	86,200	92,496	88,226	59,122
Fourmies	313,748	322,709	343,885	374,841
Total	5,126,615	5,958,889	1,070,906	1,211,338

In the month of January last Belgium imported 67,420 kilograms of woolen yarn, and cassimeres, and similar tissues of cloth to the amount of 192,610 francs, and of coatings and other heavy goods to the value of 93,100 francs, and of thin woolen fabrics to the value of 1,248,000 francs. The exports meanwhile consisted of 689,730 kilograms of woolen yarn, 115,670 kilograms of cloth, 14,510 kilograms of coatings, and 54,970 kilograms of thin woolen goods.

CHAS. P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, April 17, 1889.

THE REIHLEN CHAMPAGNE PROCESS.

REPORT BY CONSUL EDWARD P. CRANE, OF STUTTGART.

The attention already awakened among American viticulturists and capitalists in this new process and the fact that it had its birth in Stuttgart suggest it as a proper subject of a special paper. It will be seen that its interest is not exclusively commercial. In the results now extant of many years of patient research and ingenious experimentation we have an embodiment of science, and of science, too, in some of her remote and more recondite spheres. In my presentation of the subject I shall make free use of an article which appeared in No. 79 of the current volume of the Allgemeine Zeitung, of Munich.

Champagne, as is well known, is but an ordinary wine charged with carbonic acid gas. The Germans call it "foam wine" (*schaum wein*). The old French province from which it borrows the name that we give it still raises the grapes, the yield of which was first subjected to the champagne process—this process having obtained since about the year 1700. As long ago as 1826 Kessler, in Esslingen, Würtemberg, made a modest beginning in the manufacture with success so encouraging that there are said now to be in Germany as many as sixty establishments of the kind.

This old process is exacting in the extreme as respects time, labor, and careful and skillful manipulation. It begins late in the spring with the wine of the preceding autumn. In such wine the fungi, constituting the yeasty principle (pilz), are still alive and vigorous enough, upon due provocation, to set themselves at work again at their proper function of fermentation. Older wine, it has been held, could not be employed, because these vegetable germs had, it was thought, become sterilized. About 2 per cent. of sugar having been put into the bottles they are recorked. Fermentation sets in, the products being alcohol and the agent of effervescence or sparkling, namely, carbonic acid gas. But there is a further product, or a residuum, that is to the manufacturer by no means so welcome. There is at first a muddying of the wine as a whole, and then a thick deposit upon the sides of the bottle. Here begins the real labor, involving the handling of each bottle from one to two hundred times. Tannin and alum are introduced to loose the hold of this deposit from the walls of the bottles, which are then set in a position more and more inclined until at last they are quite inverted and the whole of the matter which it is desired to eliminate is gathered on and around the cork. All this is attended with the loss of from 15 to perhaps 25 per cent. of the bottles and their contents, so great and uncontrollable does the pressure become. The corks having been drawn to clear the necks of the bottles of the objectionable deposit and to replace with sugar, cognac, and strong wine what is necessarily withdrawn in this wasteful process, the champagne is recorked and is ready to be put upon the market.

Such, for more than three half centuries, has been the course of procedure in converting a still wine into a champagne. Any calculation of the amount of loss of labor and material which it involved, as against what has since proved to have been all along practicable, would appear wild in proportion to its approximation to the truth. Several years ago Herr Adolph Reihlen, of this city, turned his thought to the subject and soon reached the conclusion that there must be some way of reducing this labor and suppressing this waste. But between this conclusion and the consummation of his scheme there lay a road so long and so beset with difficulties that could he have anticipated them it is doubtful whether he would have had the courage to hold on his way. That road lay right athwart some of the most positive, or rather most negative, dogmas of the chemistry of fermentation as it had all along been taught in the schools, as, indeed, it was held to have been demonstrated over and over again. He resolved to strike for independence

of the germs that might chance to be in the wine to be dealt with. He made up his mind, as the result of countless experiments, that to introduce such germs from without was but a matter of method — of mere mechanical appliance. So high an authority as Monsieur Pasteur pronounced his scheme visionary, but Herr Reihlen was too sure of his footing in the very principles that were quoted against him to be willing to yield.

A detail of the chemistry and mechanics involved in the Reihlen process would be out of place here, but a few words upon the general line of investigation and experiment which he pursued may be of interest.

In 1833, according to the Allgemeine Zeitung article above referred to, Schwamm discovered that the deposit thrown down by wine contained countless parasitical plants of various orders and almost inconceivably minute. These were recognized as the agent in fermentation, whatever else is essential thereto being but the food upon which these subsist. Reihlen, however, discovered that these necessary organisms are by no means confined to this domain, but that they exist throughout the whole vegetable kingdom, and that they can be induced to settle down from the air upon vegetable fiber suitably prepared. So fell to the ground the theory that the wine itself must furnish the principle for its own fermentation; it is possible, theoretically at least, to furnish it from without. The materialization of this theory into a working apparatus constitutes a long and, in parts, almost thrillingly interesting chapter in Herr Reihlen's biography. This apparatus is such that large quantities of wine in one body can be subjected to the fermentation process under the impulse of the germs caught, as it were, from the atmosphere, upon wood fiber moistened with sugared water. This fiber is not thrown loosely into the receiver, but is held in a sort of basket, so that it can be withdrawn at pleasure, and with it the sedimentary matter which in the usual process gives so much trouble. There being a fixed ratio, of course, between the pressure upon the receiver and the advance of the champagne process, it is easy to determine how rapidly the contents can be drawn off as a finished product and the equivalent of the raw material, simple wine and sugar, added to make the process a continuous one. This may go on in one vessel for weeks; how many I do not know, nor can I say exactly what sets the limit.

It was in 1885 that the first bottle of this new champagne was sold. The production has increased from the 600 bottles of that year to something like 6,000 bottles a day. Thus far it has been impossible for the manufacturers to keep up with their orders. Of this the account is easy. A champagne undistinguishable by the most practiced taste from the best French brands—so it is claimed as the result of experiment—is furnished at less than 30 cents a bottle, about $1.50 a gallon. Indeed, it is found that the conversion into champagne need not add more than 20 or 30 per cent. to the cost of the wine, though, of course, in such computations much depends upon the style in which the article is presented to the public.

But cheapness is but a secondary consideration when it comes to dealing with medical requisites. From the first the new champagne has been put

into use in the hospitals of this city and elsewhere, and has called forth the most pronounced testimony to its purity and medicinal virtues from such authorities as Obermedicinalrath Dr. von Landenberger, of this city; Geheimerrath Dr. von Pettenkofer, of Munich, and Prof. Dr. Kussmaul, of Strasburg.

EDWARD P. CRANE,
Consul.

UNITED STATES CONSULATE,
Stuttgart, April 5, 1889

EMIGRATION FROM GERMAN PORTS IN 1888.

REPORT OF CONSUL-GENERAL RAINE, OF BERLIN.

I have the honor to report herewith the substance extracted from the report, just published, of the commissioner of emigration of the German Empire for the year 1888.

During the year 1888 the inspection and control of emigrant vessels were more vigorous than in former years, in direct proportion to the increase of steam-ship connections and in consequence of the operation of the Hamburg emigration act of January 14, 1887, making also obligatory the inspection of all German vessels forwarding emigrants from non-German intermediate ports. In Hamburg emigration affairs have experienced a considerable improvement, several lodging-houses for emigrants having ceased to exist, owing to a reduction in the number of passengers to be sheltered. Thus, for instance, in some of the larger lodging-houses the number of such lodgers declined from 145 to 100, in others from 402 to 192, 452 to 253, 102 to 68, and from 104 to 54 persons.

The new Hamburg emigration act, above referred to, has on the whole proved efficient.

The steamers of the Hamburg-American Steam-packet Company, which continue to ply between the ports of Stettin and New York, have likewise been equipped and arranged in accordance with the provisions of this act.

Notwithstanding a more active agitation than in former years for the purpose of inducing emigration to the Argentine Republic and Brazil, the emigration to those countries did not show any considerable increase.

Offers made by foreign contractors to the Hamburg steam-ship companies to forward contract laborers, to whom the passage money would be advanced and later on repaid, were refused on the ground that the Hamburg act forbids such transportations as lay a burdensome obligation upon the emigrant in the land of destination or as affecting in any way whatever his free choice of destination. In New York the so-called intelligence office—banished from Castle Garden—seems to continue its practices. This institution allures labor-seeking immigrants, especially those who do not understand the language of the country, promising them remunerative work on farms. Those

who thus obtain work must sign the following contract, written in the English language:

NEW YORK, ..., 188...

By these presents we bind ourselves to accept the service offered to us by Mr. ———, of Northampton, Mass., and to work for him, or wherever he may place us, for.....dollars a month, less.....dollars, which amount we are to pay for full board. This contract shall have validity for the term of one year. We agree that our employer take custody of our effects and consider the same as a plèdge or security, to be forfeited as soon as we shall not fulfill our obligations. Wages shall be payable upon expiration of the contract; but, in case we do not comply in all respects with the same, the employer shall have the right to withhold the same from us.

Witness: ———————

As soon as the contract has been executed the people are transported to Northampton, where farmers seeking laborers select such as suit them. By virtue of the contract, these laborers are now bound to do heavy work, notwithstanding bad treatment and board, for wages ranging from $50 to $100 a year, while domestic laborers are not obtainable for less than $250 a year. In this way the laborer soon finds himself in a most miserable condition, his wages and effects being often withheld for trifling causes.

In many instances complaints have been made against the unjust and dishonest practices of emigration agents, usually non-Germans living on the Austrian or Russian frontier. Frequently emigrants lacking all means of subsistence, and therefore debarred from landing in North America, were smuggled by these agents over the German frontier, thus evading the control there established.

From some emigrants more money was collected than the fare amounted to; in other instances worthless passage tickets were sold. In many cases the authorities succeeded in redressing wrongs done to emigrants and in punishing guilty agents.

In consequence partly of news published by the press and partly of complaints which otherwise reached Germany, to the effect that destitute emigrants who would not be allowed to land in the United States were being forwarded by unscrupulous agents via Canada, steps were taken so that every emigrant provided with a ticket to Canada would be asked at the time of shipment whether or not he had chosen this way of his own accord, and whether or not, in case he should wish to go on to the United States, he was acquainted with the great distance and expense.

The warnings of the press which have been made for years in regard to the enticing away of young girls to the Argentine Republic and Uruguay for immoral purposes have been continued this year. In consequence thereof a sharper watch on the part of the police authorities in the German ports has been established, leading, in one instance, to the conviction of a guilty party.

No serious accidents have overtaken emigrant vessels in the year reported. As compared with the preceding year there was an increase in the number of emigrants from the three German ports.

The total number thus shipped amounted in 1888 to 187,057 persons, among whom were 80,671 Germans; in 1887 to 172,452 persons, among whom were 79,473 Germans; in 1886 to 166,474 persons, among whom were 66,647 Germans; in 1885 to 155,147 persons, among whom were 86,900 Germans.

Embarked at Hamburg in 1888, 88,483, against 71,007 in 1887; at Bremen 95,500, against 99,476 in 1887; at Stettin 3,074,, against 1,969 in 1887.

The 88,483 persons (55,460 males and 33,023 females) who took passage at Hamburg embarked on 348 vessels sailing direct, and 477 calling at intermediate ports, in all on board of 817 steam-ships and 8 sailing vessels. Among these 88,483 emigrants were 46,465 males and 24,350 females over 10 years of age, 6,940 males and 6,588 females of from 1 to 10 years, 2,055 males and 2,085 females under 1 year. There were 13,092 families, and of single persons 35,551 males and 10,171 females; 1,096 persons were shipped on board of vessels not regarded as emigrant ships, and were therefore not subjected to any inspection.

Among the 95,500 persons (54,394 males and 41,106 females) forwarded by way of Bremen, on board of 211 steam-ships and 1 sailing vessel, were 13,248 families, of whom 34,256 were single males and 16,479 single females; 74,793 emigrants were over 14 years of age, 16,520 from 1 to 14 years, and 4,187 under 1 year. Among the 95,500 persons were 52,974 Germans.

At Stettin 3,074 emigrants embarked for New York, 1,566 being males and 1,508 females, 2,056 adults, 814 children of from 1 to 10 years, and 204 children under 1 year.

From non-European ports there came, in the course of the year, to three German ports, 40,343 persons; from Lisbon 205 persons, and from England 614; in all, 41,162 persons. Of these there arrived at Hamburg 11,056; at Bremen, 29,822; and at Stettin, 284. Of these 59 were paupers, viz: 4 from Prussia, 1 from Würtemburg, 29 from Austria, 13 from Roumania, 2 from Russia, 7 from Asia Minor, and 3 from America.

The total number of German emigrants went to the following countries:

Countries.	Males.	Females.	Countries.	Males.	Females.
United States	40,181	36,576	Peru	20	9
Canada	121	77	Chili	119	38
Mexico	42	4	Other parts of South America	143	76
West Indies	41	6	Africa	256	75
Brazil	644	354	Asia	201	24
Argentine Republic	737	394	Australia and Polynesia	341	193

The total number of emigrants shipped from the three German ports was 187,057, inclusive of the 80,671 Germans. Of these 179,142 went to the United States, 891 to British North America, 53 to Mexico, 107 to West Indies, 2,043 to Brazil, 2,522 to the Argentine Republic, 39 to Peru, 200 to Chili, 328 to other South American states, 490 to Africa, 426 to Asia, and 816 to Australia and Polynesia.

Of the 106,386 non-German emigrants 39,307 were Russians, 17,712 were Hungarians, 15,885 were Austrians, 8,631 were Bohemians, 4,069 were Danes, 3,490 were Swedes, and the remainder consisted of Swiss, Spaniards, and scattering representatives of other nationalities.

F. RAINE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, March 8, 1889.

DYE-WOODS IN BORDEAUX.

REPORT BY CONSUL ROOSEVELT.

There are fifteen dyeing establishments in the city of Bordeaux, giving employment to some four hundred working people and importing a considerable amount of exotic coloring woods, which are used in ordinary dye-works, and also by manufacturers of cotton goods.

CAMPEACHY WOOD.

The principal dye-wood employed here is campeachy wood, very rich in coloring matter and imported from Yucatan, where it grows most luxuriantly. It is also imported from the Antilles, Hayti, and South America, where the trees attain a height of 36 to 40 feet. Its principal coloring is a vinous red, slightly shading to blue, but varies according to the acid substances employed, and produces violet, black, red, yellow, gray, etc.

YELLOW WOOD.

Yellow woods are classified according to the countries from whence imported. That from Cuba is very valuable, and is known by the fine orange and yellow veins running through it, which also denote the quality. It is principally employed in silk dyeing. Yellow wood of Mexico, Colombia, Cuba, Hayti, and Jamaica, while yielding numerous colors, principally produce yellow, brown, and green. The yellow wood of Tuxpan, Gulf of Mexico, is more esteemed than that coming from Tampico, which is porous; both, however, produce a bright yellow color. While all the yellow woods of the Antilles are very good for dyeing purposes, care is taken to choose only those of a decided bright color.

REDWOOD.

Pernambuco wood, commonly called Brazil wood, is found in the environs of Pernambuco, where the trees grow to immense height. Although of very knotty structure, it possesses a most beautiful color. The species known as Pernambuco redwood, is entirely under the control of the Brazilian Government. The price is excessive, varying from $14 to $24 for 200-weight, owing to which but a small quantity of it is imported into France. The color is a positive but beautiful red. There are several species found in the West Indies,

Central America, and the Antilles. This wood is either of a reddish-yellow or dark-red, which changes to a dark-brown when exposed to the air. The tints derived from it are light-red, and amaranth. It is also employed to produce a more positive madder-red, and to apply colors on wool, silk, and cotton. The colors, however, are not durable, but can be rendered more stable by steaming, or when in mixing, by the addition of gall, sumac, or other astringents. Redwoods are divided into two classes, extractive and non-extractive. The extractive species are imported from Brazil, Chili, Colorado, Nicaragua, Saint Martha, Rio Grande, and includes, also, the Sapan wood from Manilla, Siam, and the Antilles. Chili and Colorado woods are especially esteemed; the color is pale-rose or brownish-rose. The importations from the Antilles arrive here generally full of sapwood; the color is pink, deepening to violet. Bahia wood of good quality is violet-red in color. The Sapan wood, of Manilla and Siam, imported via India, is pale in color, but develops a beautiful bright red. Non-extractive woods are sandal, calcatour, and camwood. The characteristics of these species are that when put into either cold or hot water they do not change color, nor impart their color to the water. It is only when brought into contact with caustic substances that they yield their coloring matter.

Sandal-wood is imported into this port from Africa, and is not only employed in dye-works, but is also largely used in cabinet work. Camwood also comes from Africa. It furnishes beautiful and solid tints. Calcatour wood is brought from the West Indies.

IMPORTATION.

The principal importations of dye-woods into this port from 1883 to 1887, inclusive, were from Hayti, Gautemala, Mexico, Argentine Republic, and Brazil, as follows:

	Values.
1883	$4,283,362
1884	3,143,578
1885	3,708,674
1886	3,329,044
1887	4,197,904
Total	18,662,562

The following is a tabulated statement of the importations and exportations of exotic woods at the port of Bordeaux from 1882 to 1887, inclusive:

Years.	Importation.	Exportation.	Years.	Importation.	Exportation.
	Pounds.	*Pounds.*		*Pounds.*	*Pounds.*
1882	2,158,730	31,602	1886	3,639,468	584,172
1883	4,396,336	302,696	1887	5,297,862	1,117,276
1884	3,324,456	19,990	Total	24,136,712	2,093,712
1885	5,319,860	37,976			

The amounts of common woods and staves imported and exported from 1880 to 1887 were as follows:

Years.	Common woods.		Staves.	
	Importation.	Exportation.	Importation.	Exportation.
			Number.	*Number.*
1880	$6,641,786	$602,593	16,808,651	27,345
1881	4,064,895	575,333	9,556,932	10,878
1882	6,552,393	636,987	13,264,422	140,085
1883	6,703,057	919,510	23,890,232	79,026
1884	5,426,002	1,072,829	20,888,109	128,032
1885	5,252,808	918,454	21,701,872	31,517
1886	3,976,335	869,968	16,379,158	39,786
1887	5,265,638	1,065,814	23,397,037	155,263
Total	43,882,914	6,661,488	155,886,413	611,932

GEO. W. ROOSEVELT,
Consul.

UNITED STATES CONSULATE,
Bordeaux, April 25. 1889.

THE CONSULAR DISTRICT OF GENOA.

REPORT BY CONSUL FLETCHER.

EMIGRATION AND LABOR.

Of late years but little emigration has taken place to the United States from this consular district, for the reason that the people find fairly remunerative work at home. There seems to be a constant study on the part of the general Government, as well as the local authorities, to furnish work to those who earn their bread by manual labor.

DESCRIPTION OF THE DISTRICT.

The territory comprising this consular district extends about 90 miles west and about 56 miles east from the port of Genoa along the coast of the Mediterranean. The population thereof is estimated at about 900,000.

The peculiar formation of the district is such that fully three-fourths of the people live along the sea-coast, for the lofty ranges of the Appenines (from San Remo to Albengo) and the Maritime Alps, with their barren tops and almost barren sides, offer but little reward for toil to even the industrious Genoese. But this sea-coast is most picturesque, viewing it either from the sea or on land. Here and there little villages can be seen, and as high up the mountain sides as vegetation grows pretty looking villas and other structures, surrounded by vineyards and olive groves, greet the eye.

The cultivation of the grape and olive along the so-called west coast is the chief industry. Throughout the entire district but very little idleness or shiftlessness can be seen. Many of the villages have either a mill, a factory, or a foundry, where men, women, and children find work at all seasons.

PLACES OF PROMINENCE.

The chief towns of the district, outside of Genoa, are Spezia, with its extensive government works; energetic Savona, with its 30,000 inhabitants; San Remo, and Porto Maurizio. Savona is a particularly busy place; many English steamers discharge cargo there which formerly came to Genoa. This is the case particularly since the new line of railroad was opened, a few years ago, between the last-named town and Alessandria and Turin. Much of the importations designed for the interior provinces of upper Italy are now landed at Savona and passed over their new road, thus relieving to some extent the great strain to which Genoa has been subjected for years on account of an overcrowded harbor and insufficient railroad facilities.

GENOA PROPER.

It is no stretch of imagination to say that more improvements have been made in this old city since, say, 1860 than in the two hundred and fifty years previous to that date. It is also remarkable to see with what nicety and precision every foot of land is turned to the best advantage for the public good and for private uses.

Space is so limited between the water front and mountains that people are now compelled to drill and blast the rocky sides of the latter in order to procure a site for a building. In this labor, however, sufficient stone is quarried on the spot to erect a structure of any size.

More streets and broader ones are much needed inland from the port. The crush and jam daily on the few streets wide enough for wagons is indescribable. Plans and specifications are asked for to overcome this difficulty. Whatever plan may be adopted, one fact is very obvious, it will incur an enormous expense and must force the razing of many houses and some churches in the most densely populated parts of the city. Even the old palace of St. George is threatened by modern requirement. It is claimed for this venerable old building that in it was established the first bank known to the world of commerce (the Venetians, however, claim priority for such an institution). This palace was also the seat of government of the Genoese republic for many years, but when Genoa was united to Sardinia, in 1815, the old pile fell into disuse. Of late years it has been used as a custom-house.

What was well and favorably known to travelers as the "Marble Walk," a promenade between 30 and 40 feet high and about half a mile in length, is now a thing of the past. This walk was located near the water front, but the continued increase of business at the port demanded its destruction. Engines and freight cars now run where it once stood.

CLEAN STREETS.

In no city in Italy can cleaner streets be found than in Genoa, and for this state of affairs the municipal authorities deserve much credit. On streets wide enough for the passage of carriages the jam and rush from dawn to

midnight is very great; still, so perfect is the system of cleaning those busy thoroughfares that strangers always comment on the thoroughness in which the work is done. In this labor about 160 men are employed as sweepers, between 30 and 40 horses, 60 carts, 85 hand-carts, 30 cart-men, 10 men to unload the horse-carts, 4 joiners to repair carts, 2 blacksmiths, and 3 men to take care of the stables.

THE NEW MOLE OR BREAKWATER.

This great work is a matter of much pride to the Genoese; and now, years after his death, the people offer prayers to the memory of the late Duke of Galliera on account of his forethought and keen insight into the future, but particularly on account of his princely gift of 20,000,000 francs towards the construction of the new mole, under the following conditions: He would give the above sum of money for the purpose named, providing that when the said amount was exhausted the Government would furnish the balance necessary to complete the work according to the plans and specifications approved and adopted.

The proposition was accepted, and on the 14th day of October, 1877, a work which consumed eleven years in its construction was commenced in earnest. Through the kindness of Cavalier Toffani, director-in-chief, I am indebted for the following interesting items in connection with the construction of the new breakwater.

As stated above, work commenced thereon October 14, 1877, and on the 14th day of October, 1888, the new mole was declared completed, and so accepted by the Government. During this period of eleven years there were employed daily 1,500 workmen, 200 horses and carts, 20 hand-wagons, 30 cranes, 6 tow steamers, 36 large boats, from 100 to 300 tons each; 4 large lighters, and 40 boats of smaller capacity. The depth of the water along the outer mole is 87 feet and along the inner wall 45 feet.

Cavalier Pietro Giáccone, a Government officer, acted as chief engineer during all this labor, and to him I am indebted for the following statistics concerning the new quays in process of construction, and to be constructed by the year 1893, on all of which he is engineer-in-chief.

There are four hundred and ten men daily employed in the construction of the new quays. One quay, Saint Teodora, will be shortly completed. New hydraulic cranes have been placed along the wharves, and for the past year forty-five of those machines have been in constant use.

In addition to all the enterprises named, there have also been reclaimed from the sea large tracts of land along the old sea-walls, and on this new terra-firma many buildings for various purposes are being erected. The near future will also witness in the port of Genoa two dry-docks and two floating docks capable of accommodating vessels of the largest capacity. The dry-docks are to be 615 feet long and 42 feet in depth, and 726 feet long and 48 feet deep, respectively.

OTHER ADDITIONS TO GENOA.

The late head of the house of Galliera was not the only member of that family who has contributed lasting benefit to Genoa. Soon after her husband's death the duchess caused to be purchased a certain tract of land in that part of the city known as Carignano, a lofty elevation near the sea, and on this land now stands one of the finest hospitals in Europe. Every convenience that modern ideas could suggest has been employed to make this grand building, or rather series of buildings, a very haven of rest for the sick. The hospital was opened to receive patients on the 14th day of last March. The cost thereof is placed at 7,500,000 lire, or $1,447,500, all of which the Duchess of Galliera contributed from her own fortune. In addition to the hospital named, this lady caused to be erected two other retreats for the sick, one exclusively for children of poor parents, containing 36 beds; the children must be under twelve years; the other for insane persons, containing 150 beds.

To sustain those three institutions the duchess has left sufficient property in trust, so that the annual income therefrom will not fall below $100,000, and this must be used exclusively for the hospitals. This estimable lady died in Paris about two weeks ago.

JAMES FLETCHER,
Consul.

UNITED STATES CONSULATE,
Genoa, December 27, 1888.

NATIVE TRADE IN CHINA IN 1888.

REPORT BY MINISTER DENBY.

The reviews by the native press of the native trade of Shanghai during 1888 indicate that business has been prosperous. Complaint is made that the old solid system of Chinese business is becoming sapped owing to extravagance and speculation.

The black tea merchants have done better than in past years, the diminution of demand in the country having kept down prices paid to the growers, while the foreign demand has continued good. The green tea merchants have also done well. The silk market was depressed until October, when there was a marked reanimation.

The bankers all made profits, not a single failure being recorded. The trade in bean oil largely increased. Cotton was in large supply and gave good profits owing to the steady demand in Japan. Rice gave a fair average profit,

Piece goods dealers did badly. A check to the demand was caused by the floods in the north. These floods will have a large influence on the coming spring trade.

The junk trade continues to decline under the competition of foreign steamers.

The opium dealers lost in 1888 owing to the depreciation of silver. The price of opium has definitely risen since the collection of likin was transferred to the foreign customs. The real cause of the rise, however, is the short crop both in India and China.

The book trade has been injured by the extension of photo-lithographic establishments in Shanghai, but the trade will be improved by the extra kügin examination in 1889 in celebration of the Emperor's marriage.

The China Merchants' Steam Navigation Company and the Chinese Telegraph Company had a good year.

There was much hope of the prospect of business for the China railways. Since the Empress has countermanded the permission to build the extension to Tung Chow this hope has measurably disappeared, but Li Hung Chang is now making a great effort to secure a reversal of this decision with some prospect of success.

CHARLES DENBY,
Minister.

LEGATION OF THE UNITED STATES,
Peking, February 20, 1889.

PRODUCTS AND COMMERCE OF VALENCIA.

REPORT BY CONSULAR AGENT MERTENS.

The province of Valencia is one of the most fertile of the Kingdom of Spain. It is populated with 679,046 inhabitants, and is situated between 39° and 41° north latitude and 16° and 18° east longitude from Ferro. A rich soil, well irrigated by various rivers and numberless canals, and warm sunshine makes the earth yield abundant crops of every growth belonging to the temperate zone. Being well protected from the cold blasts of winter by mountain ranges and through the moderating influence upon its temperature from the bordering Mediterranean Sea, its climate is most benignant, in winter never lower than 40° F., while the summer heat, seldom reaching higher than 95° F., is daily refreshed by pleasant sea breezes.

The richness of this province consists, as already mentioned, in its natural products. Manufacturing of any description is, with very few exceptions, in a rather primitive and neglected state, and can stand no comparison with its neighboring province, Catalonia.

VALENCIA ORANGES.

Among the principal articles raised in this province the orange for export is the most important. The orange industry in this province is a very old one. The fruit was shipped in former years to the neighboring French ports only in small coasting vessels. The export of such perishable fruit to far countries commenced only after the year 1855, when steam navigation became more general. This gave great impetus to orange culture. Oranges are raised in two districts in this province, the one, south of Valencia, called the "Riviera," produces a tender fruit, while the other, north of this town, called the "Plana," grows a tougher-skinned fruit, better resisting decay upon a long voyage. An average crop now amounts to 3,000,000 cases. Oranges shipped to foreign countries are enveloped in white or colored tissue paper, which is mostly imported from France. The packing in cases varies,

depending upon the country to which the fruit is to be shipped. For instance, to England, in cases with 420 oranges, 76 kilograms in weight and 96 to 99 centimeters long; in cases with 490 oranges, 70 kilograms in weight and 90 to 92 centimeters long; United States, in cases with 420 oranges, 80 kilograms in weight and 100 centimeters long; in cases with 420 (extra) oranges, 90 to 100 kilograms in weight and 104 to 108 centimeters long; Holland and Germany, in cases with 420 oranges, 80 kilograms in weight and 100 centimeters long; France, in cases with 240 (extra) oranges, 66 to 68 kilograms in weight and 97 centimeters long; in cases with 312 oranges, 68 to 72 kilograms in weight and 100 centimeters long; in cases with 420 oranges, 82 to 88 kilograms in weight and 100 centimeters long; in cases with 490 oranges, 82 to 86 kilograms in weight and 95 centimeters long. Oranges are also sent in bulk by rail in great quantities to France.

The pine trees grown in Spain furnish the timber for making the cases, and costs, ready sawed, from 20 to 25 cents per case. The export from Valencia during the last twelve years has been as follows:

Year.	Cases.	Year.	Cases.
1876–'77	800,000	1882–'83	2,000,000
1877–'78	1,045,000	1883–'84	2,100,000
1878–'79	1,066,000	1884–'85	2,400,000
1879–'80	1,200,000	1885–'86	2,500,000
1880–'81	1,144,000	1886–'87	2,000,000
1881–'82	1,600,000	1887–'88	1,500,000

The falling off of the trade in 1886–'87 was due to fewer shipments to the United States, and these have decreased even more during the last year on account of the Florida supply, for which reason the States will, in a very short time, cease to buy from Spain.

In 1887 severe frosts destroyed an immense number of the trees, causing the comparatively smaller exports in 1887–'88. Germany has increased its imports of this fruit during the last four years, owing to the establishment of fruit auctions at Hamburg. Formerly these imports were but a few thousand cases yearly, whereas now the imports reach 150,000 cases. The cost price of a case containing 420 oranges amounts to from $1.50 to $1.75 f. o. b. at Valencia.

VALENCIA RICE.

The cultivation of rice in Spain is a very ancient one, and it is grown in the province of Valencia exclusively, where the low district between the mountains of central Spain and the Mediterranean offers great advantages for the necessary irrigation, this being done by the River Fucar and also a well-arranged canalization. The ground under rice culture comprises about 28,000 hectares, and an average crop is calculated to be about 100,500,000 kilograms, which yields about 75,000,000 kilograms of rice without the husk. The quality of this rice is excellent in all the different kinds sown, and fully equal to our famous Carolina rice.

Artificial manure, mostly of English manufacture, is used abundantly, to the amount of 25,000 tons annually. The sowing of the rice takes place in March, the transplanting of the rice blades when 20 to 30 centimeters high in May and June, and the final crop in August and September, the rice then reaching 1 meter high.

The town of Valencia consumes 25 per cent. of the total crop of the province; 50 per cent. is used in other parts of the country, and the remaining 25 per cent. is shipped to transatlantic places, mostly to Cuba. Foreign polished rice has been imported in years of bad crops, although foreign rice finds a market here when the price ranges lower than the home production. There are about one hundred and twenty mills in this province for polishing the rice. Water is generally used for motive power, but during the last ten years steam-power has been introduced; this, however, in most cases is only brought to aid when water is scarce. Very few mills work entirely with steam. Most mills are worked by a primitive and old-fashioned system. Only one mill here has mounted its machinery after the East India style with conic stones and steel covers.

VALENCIA WINE.

The production of wine has increased since the year 1869, when the phylloxera, appearing for the first time in France, turned attention to Spanish wines on account of their rich natural properties of alcohol and color. In 1875 a regular trade in wine between the two countries was established, and exportation from here increased with every year until 1885, when France recovered much of its lost crop by successfully planting American vines. This greatly checked this country's export trade, especially when competitors from other wine-growing countries appeared on the French markets. Besides to France, this wine is shipped in great quantities to South America in barrels and pipes of various sizes, for which the staves have to be imported from foreign countries.

SAFFRON.

The average yield of the saffron crop in this country amounts to between 180,000 and 225,000 pounds, a quantity four-fifths of which is quite sufficient to cover the entire consumption of Spanish saffron, so that in seasons of an abundant crop, when perhaps 280,000 to 300,000 pounds are harvested, a heavy stock accumulates. Three successive abundant crops generally cause the farmers to reduce their plantations. The lowest price at which saffron-growing can be made to pay closely approaches the equivalent of $7 per pound. At Pithiviers, in the Gatinais (France), a maximum crop of from 27,000 to 34,000 pounds was harvested in former years, but since the severe frost which occurred in that district in 1879 the largest crop has not exceeded 11,000 pounds; in 1887 it was only about 7,800 pounds and in 1888 scarcely reaching 2,000. At present, Spanish saffron unquestionably rules the market. The average Italian crop may be placed at 11,000 to 14,000 pounds per annum, and in Austria saffron-growing only pays if the price is at least

$13 per pound. This Austrian saffron is the best of all, and next to it ranks the Gatinais, the only drawback of which is that it very quickly loses its vivid color. In Spain saffron is divided into five grades, each cultivated in a different district. The center of the export trade is Valencia, where the saffron is stored by the merchants, who generally advance money on it to the cultivators. These merchants sell it to the local agents of foreign houses, who export the drug in strong wooden cases with an outer covering of matting, each case about 160 pounds in weight, in which the saffron is packed in white paper. For export to distant countries, however, the saffron is generally packed in tins, which are placed in wooden cases. The principal buyers of Spanish saffron are a few firms in southern Germany; Pithiviers and Marseilles used to buy large quantities in Spain, but do not now take quantities of any importance. Other countries purchasing direct from Spain are England, North America, South America (especially Buenos Ayres, Montevideo, and certain ports on the west coast), British India, and Japan. Adulteration is, of course, practiced to a very large extent. At Novelda, in the province of Alicante, it is said to be largely adulterated.

VARIOUS PRODUCTS.

Onions, melons, and tomatoes are also raised in great quantities for the export trade. Figs and pea-nuts suffered last year greatly by the rains, and the short crop did not allow any shipping to foreign countries. Wheat, Indian corn, and beans are raised in superior quality, but never enough for home consumption. The import of these necessary articles is therefore obligatory.

IMPORTS OF VALENCIA.

Coal.—The import of this port in general embraces nearly every manufactured article beside coal, which is brought here from England up to 70,000 tons yearly.

Cod-fish.—Salted cod-fish, which supplies the poorer and laboring class with food, was imported here to the amount of 1,450,000 pounds from Norway and 4,485,000 pounds from Newfoundland and Labrador during the year 1888. This, too, is a decrease of 25 per cent. from previous years, on account of the introduction of American bacon, which, although not received directly from the States but by way of England, Germany, and France, proves cheaper and more satisfactory than cod-fish.

Timber.—Lumber is one of the principal articles of import, since the greater part of the trees in this province are of the fruit-bearing kind. Last year's imports were, in cubic meters: Spruce pine, 17,100 from Russia, 6,300 from Sweden; of beech tree, 535 from Austria; of oak wood, 5,600 from Canada and the United States; total, 29,535 cubic meters.

There is a great demand for oak-wood staves from the United States, but, through the want of direct communication in order to obtain a more economical result, the import of these is but small, and they are replaced mostly by Italian pine-wood staves. Also, railroad sleepers of oak and

other wood might find a good demand here; they are now brought from Austrian ports or from northern Spanish places.

Petroleum.—Crude petroleum is brought here from New York to the amount of 1,000,000 gallons a year to the one and only refinery in the place. Its refined kerosene is, however, of very inferior quality; of a dirty, yellowish color, and said to be 10 degrees lower in the flashing point than English refined petroleum. It is sold here at $3.60 per box, with two cans, under the protection of the import duty on refined petroleum, which is $4.83 per 100 kilograms, while crude petroleum only pays $2.40 per 100 kilograms.

Fertilizers.—Artificial guano is greatly used in this province, its total import amounting to 40,000 tons a year. The principal brands introduced here are St. Gobain, Jaille, Copros, Lames, and Peruvian. It is sold in bags of 50 and 100 kilograms each at from $4.75 to $5 per 100 kilograms; duty and discharging comes to 14 cents per 100 kilograms.

Alcohol.—Alcohol from the United States finds a ready market here whenever it can compete in price with the German product. At present, however, there is a deadlock in the import of this article on account of a wrongly administered law of putting a very high consumption tax on alcohol used for the wine export. This law has seriously injured the wine trade, and its amendment or repeal is under discussion.

NAVIGATION.

Various of the above-mentioned articles show a continued import from the United States, yet from the following list of the movement of vessels under foreign flags in this port during the year 1888, it will be seen that American vessels are far behind those of all other nations:

Entered.

Nationality.	Sailing.		Steam.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.
British	13	4,125	284	192,674	297	196,799
French	20	2,505	159	104,765	179	107,270
Norway and Swedish	8	3,801	179	88,132	187	91,933
Italian	59	14,399	2	727	61	15,126
German	1	407	5	3,050	6	3,457
Russian	22	11,912	14	7,178	36	19,090
Danish	2	621	14	12,187	16	12,808
Austrian	2	350	.....	.....	2	350
Belgian	.....	.....	4	4,789	4	4,789
Grecian	3	671	1	840	4	1,511
United States	1	871	.....	.....	1	871
Total	131	39,662	662	414,342	793	454,004

AMERICAN TRADE WITH VALENCIA.

If American ships—small steamers or sailing vessels—regularly plying, would bring one principal product to Mediterranean Spanish ports, thus establishing a somewhat regular line, they would in time bring many Ameri-

can articles which can not compete now with European articles, simply on account of the difficulty in receiving them direct and on account of the enormously high charges of transshipment in England. The superior American hardware, for instance, is known here, but can not be introduced on account of the obstacles enumerated. If only outward bound steamers from the United States to the Mediterranean would even begin stopping at two or three Spanish ports, it would make this country a customer for American wares. Home freight from here may always be had, either from a neighboring French port or taking in salt or ore at a southern Spanish port.

The port of Grao-Valencia has the second place of importance in Spain, the entrances and clearances being as follows in 1888:

Description.	Entered.		Cleared.	
	No.	Tons.	No.	Tons.
Steamers	1,661	1,610,796	1,667	1,615,296
Sailing vessels	1,314	55,188	1,353	56,358

The following illustrates the export from this port to the United States during the past two years:

Articles.	Value.		Articles.	Value.	
	1887.	1888.		1887.	1888.
Oranges	$172,051	$180,487	Capers	$621	$223
Raisins	26,823	19,724	Licorice	450	4,988
Saffron	20,952	17,092	Sundries	17,414	1,022
Onions	668	7,093	Total	263,156	254,376
Wine	24,177	23,747			

FOREIGN INVESTMENTS IN VALENCIA.

Little has been done to make the numerous mountains of this province yield their wealth of coal and other minerals. Railroad communication with the interior of the province is still in its infancy, though of late a more lively interest seems to have sprung up, and concessions for various small lines have been applied for and granted to companies formed with partly Spanish, partly foreign capital. Were it not for the want of ready capital to procure a more rapid progress in the development of the resources of this place and port, this province might increase its production and export trade to a much larger extent, as shown by the foregoing report. There is, however, a favorable outlook in this direction, since of late the branch office of a large English banking concern has established itself here, which enterprise, it is said, will be followed by a French bank of similar standing.

THEODOR MERTENS,

UNITED STATES CONSULAR AGENCY, *Consular Agent.*

Grao-Valencia, March, 1889.

NAVIGATION OF ANTWERP—1888.

REPORT BY CONSUL JOHN H. STEUART.

I have the honor to submit the following report upon the navigation of the port of Antwerp for the year 1888, as compared with 1887.

The total arrivals of vessels by sea during 1888 were 4,823, with a tonnage amounting to 3,974,320, being the highest figure ever yet attained, and showing the steadily increasing importance of this port. Of the above number of vessels 4,047 were steamers, with an aggregate tonnage of 3,614,331, or nearly 91 per cent. of the total, and the remainder, 776, were sailing vessels, with 359,989 tons. As compared with the previous year there was an increase of the total tonnage arriving of 172,368 tons, as follows: Steamers, 161 less in number, but in tonnage an increase of 213,357 tons; sailing vessels, a decrease of 38 in number and of 40,989 in tonnage. The above result shows the continued increase of steam tonnage and the equally steady decline of sailing vessels, so far as this port is concerned.

The total departures of vessels by sea during the year 1888 were 4,833, with a tonnage of 3,973,636 tons. Of this number 3,730, aggregating 2,846,275 tons, cleared with cargoes, and the remainder, 1,103 vessels, with 1,127,361 tons, went out in ballast. As compared with 1887 the number of vessels taking cargo was 406, with 153,223 tons less, whilst those clearing in ballast were 191, with 297,410 tons in excess of the figures of that year.

Arrivals of sea vessels at Antwerp from 1879 to 1888, inclusive.

Year.	Steamers.		Sail vessels.		Total.		Average tonnage.
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	
1879	2,892	2,287,721	1,356	620,290	4,248	2,908,011	685
1880	3,158	2,504,763	1,468	612,991	4,626	3,117,754	674
1881	2,963	2,423,194	1,147	515,287	4,110	2,938,481	715
1882	3,292	2,945,522	1,149	507,772	4,441	3,453,294	778
1883	3,700	3,440,074	989	417,860	4,689	3,857,934	823
1884	3,874	3,034,559	935	477,481	4,809	3,512,040	*730
1885	3,885	3,067,493	975	425,441	4,860	3,492,934	*719
1886	3,865	3,097,945	861	423,284	4,726	3,521,229	*745
1887	4,208	3,400,974	814	400,978	5,022	3,801,952	*755
1888	4,047	3,614,331	776	359,989	4,823	3,974,320	*824

*International tonnage.

From the preceding table it will be seen that during the last ten years the arrivals of sea vessels at Antwerp have increased from 4,248 vessels, with 2,908,011 tons, in 1879 to 4,823 vessels, with 3,974,320 tons, in 1888, a difference in favor of 1888 of 575 vessels and 1,066,309 tons, respectively 13½ and 36½ per cent., and in the average tonnage one of 139 tons, over 20 per cent.

Arrivals of sea vessels at Antwerp, by flag.

Flag.	Steamers.		Sail vessels.		Total.	
	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
American	4	9,064	10	13,289	14	22,353
Argentine Republic	.....	.....	1	220	1	220
Austrian	3	4,191	1	493	4	4,684
Belgian	427	490,577	8	9,805	435	500,382
Danish	133	122,643	41	6,770	174	129,413
Dutch	474	100,262	25	3,749	499	104,011
English	2,099	2,078,724	365	187,725	2,464	2,266,449
French	102	90,959	15	4,760	117	95,719
German	448	461,648	63	35,379	511	497,027
Greek	19	22,041	.....	.....	19	22,041
Italian	15	29,371	24	12,311	39	41,682
Norwegian	121	52,969	152	61,286	273	114,255
Portuguese	9	6,330	1	498	10	6,828
Russian	4	3,988	25	9,032	29	13,020
Spanish	81	79,001	2	501	83	79,502
Swedish	106	59,507	43	14,171	149	73,678
Turkish	2	3,056	.....	.....	2	3,056
Total	4,047	3,614,331	776	359,989	4,823	3,974,320

The preceding table shows that England maintains her supremacy, as her flag covered 2,464 vessels, with 2,266,449 tons, being 57 per cent. of the whole tonnage of the port, and an increase over the preceding year of 145 vessels and 220,900 tons. Belgium comes next with 435 vessels and 526,187 tons, being a decrease of 113 vessels and 25,805 tons from 1887. Norway had a decrease of 48 vessels and 19,541 tons, the United States one of 8 vessels and 16,746 tons, Holland of 174 vessels and 16,662 tons, France of 18 vessels and 15,618 tons, Sweden of 4 vessels and 3,750 tons, and Germany of 1,647 tons, although an increase of 6 in the number of vessels.

An increase was marked with the following nationalities: Italy of 2 vessels and 19,205 tons, Denmark of 14,210 tons, although she had a decrease of 5 in the number of vessels; Greece of 7 vessels and 8,008 tons, Spain of 10 vessels and 6,765 tons, Austria of 1 vessel and 3,135 tons, Portugal of 2 vessels and 1,598 tons, and Russia of 179 tons, although a decrease of 1 in the number of vessels.

The United States has at last nearly reached the bottom of the list, her contribution being only 14 vessels—4 steamers and 10 sailing vessels—with a tonnage amounting to 22,353 tons, or little more than one-half of one per cent. of the aggregate tonnage entered. As compared with the preceding year, there was a decrease of 10 vessels and of 16,746 tons.

Of the 4 American steamers arrived 1 brought wheat and 1 general cargo from New York, 1 general cargo from Philadelphia, and 1 came here in ballast from Liverpool to load for New York. Three of the departures were for New York and 1 for Philadelphia, all with general cargo. As regards the 10 American sailing vessels entered, 4 brought petroleum from New York, 5 wheat from the Pacific coast, and 1 wheat from Rosario, South America.

The total value of the merchandise brought by said 14 American vessels was $883,000, of which amount $410,000 was due to the steamers and $473,000 to the sailing ships.

The sailing vessels cleared as follows: 5 with iron and empty barrels for New York, 1 with iron and barrels for Baltimore, 1 for San Francisco with general cargo, 2 for Cardiff in ballast, and 1 for Swansea in ballast.

The tonnage entered from foreign countries amounted to 3,974,320 tons, and that departed to 3,973,636 tons, making a total movement of 7,947,956 tons, which was an increase over the year preceding of 316,555 tons, or a little over 4 per cent.

Nearly one-half of the total carrying trade was furnished by England and the United States; the former country gave employment to 3,702 vessels, aggregating 2,800,234 tons, so that with 57 per cent. of the tonnage of the port she contributed 35 per cent. to the carrying trade, and the United States, while she had only about one-half of one per cent. of the tonnage under her flag, contributed to the extent of 924,621 tons, or about 12 per cent., employing 462 vessels. As compared with the figures of the preceding year, England had an increase of 289,683 tons, while America had a decrease of 252,341 tons.

Nine and one-half per cent. of the carrying trade was from and to the South American countries, against 10 per cent. the year preceding.

Although, naturally, the bulk of the carrying trade from and to the neighboring countries, is done by land, still by sea Germany and Russia contributed 7½ per cent. each, Roumania 4 per cent., Hindostan 3¾ per cent., Holland 3½ per cent., and Spain and France about 3 per cent. each.

More than one-half of the carrying trade done by Belgian vessels was from and to the Atlantic coast of the United States.

The movement of river vessels between Antwerp and the interior of Belgium, as well as the neighboring countries, shows a decrease of 2,026 vessels but an increase of 105,218 tons. The average tonnage of this movement has increased from 90½ tons in 1887 to 96 tons in 1888, about 6 per cent.

The merchant marine of Antwerp consisted, at the end of the year 1888, of 55 vessels — 50 steamers and 5 sailing vessels — having an aggregate tonnage of 81,374 tons. As compared with the end of the year 1887 this makes a decrease of 2 vessels, but an increase in the tonnage of 167 tons.

The Red Star Line are now building and expect to have ready in early summer a new steamer, larger and faster than any they have at present. It is to combine all the modern appliances for comfort and safety, and will be a valuable and needed addition to this favorite fleet of steamers.

JOHN H. STEUART,
Consul.

UNITED STATES CONSULATE,
Antwerp, March 8, 1889.

GIBRALTAR AND NEIGHBORHOOD.

REPORT BY CONSUL SPRAGUE.

Notwithstanding that the political situation of Europe seems to be less threatening among its leading powers, still the uncertainty prevalent among those who are generally considered the arbiters of public affairs has had its influence in contracting the limits of speculative adventure, thereby circumscribing the general course of trade throughout the Mediterranean.

AMERICAN PRODUCTS.

In renewing to the Department my reports upon the navigation and general commerce of Gibraltar, I beg to state that there has been a tolerably fair current business prevailing in American produce during the past quarter, consisting chiefly in flour, tobacco, and refined petroleum in cases, imported direct from New York.

The steady demand for American petroleum confirms the fact that Russian petroleum so far receives but little attention in this market from the regular traders and consumers, so long as supplies from the United States can be regularly imported at reasonable prices. It, however, remains an open question, in the event of lower prices ruling in the Russian petroleum regions, whether American supplies may not later on experience some greater competitive foreign interference.

STEAM-VESSELS AND THE COAL TRADE.

According to the statistical data given in the inclosed statements showing the extent of the navigation at this port, it will be seen that steam-vessels of all nationalities have continued to make Gibraltar their port of call not only for orders, but also for replenishing their stock of fuel and provisions, and in larger numbers than ever before, the number in 1888 having reached 5,712 steam-vessels, measuring in all 5,969,563 tons, while in 1887 the number was only 5,187 steam-vessels, with an aggregate tonnage of 5,372,962. This increase can not but result in considerable benefit to the coal and maritime traffic, which now forms the most important portion of the general commerce of Gibraltar, in spite of the keen competition it experiences from other British and foreign coaling ports. Freights have also advanced in favor of steamship interests, which, with higher prices in England for coal, have also caused an advance in the price of coal at this port, to the benefit of the coal merchants and others interested in this important trade. At present the ruling price for steam coal is 24*s.* per ton, deliverable from alongside of coal hulks moored in this bay. As near as I have been able to ascertain, the quantity of coal sold in this market during the past year for supplying merchant steam vessels has amounted to about 508,000 tons. which is an increase of about 20,000 tons over the year 1887.

THE ARMAMENT OF THE FORTRESS.

Notwithstanding that plans have already been submitted to the British Government for the construction of a dry-dock in Gibraltar, the matter remains somewhat in suspense, since it meets with some opposition on the part of the British Government, which, in face of the European fever for general arming, seems more inclined to utilize in another form the expense which such a work would entail upon the Imperial Government, by replacing the obsolete ordnance recently removed from this fortress and substituting new defenses and guns of the most approved patterns, a matter which has evidently been receiving, for some time past, the special attention of the British military authorities, not doubting that the recent visit to the fortress of the Duke of Cambridge has had some connection with it. In fact, it is reported that the duke has already expressed the opinion that this fortress requires a larger number of artillerymen than are quartered here at present to man its batteries, and it would seem that this recommendation is likely to be carried out.

PROBABLE CULTIVATION OF TOBACCO IN SPAIN.

It is yet somewhat too early to venture an opinion regarding the growing crops of cereals in this Spanish neighborhood, but the agricultural and manufacturing interests in Spain have suffered so much in the past years that the general feeling in Spain continues to tend towards establishing increased restrictions against foreign competition in her home markets. There is every probability that the provinces of Malaga and Granada may shortly be granted the privilege of cultivating the tobacco plant under Government supervision, as an essay. If properly managed it may form an important and lucrative business for those interested in land and agricultural pursuits.

RAILROADS.

After many consecutive years of heavy outlays, difficulties, and constant disappointments, a new English company has recently succeeded in commencing the construction of a railway from the neighboring Spanish town of Algeciras to join, via Ronda, the railway station of Bobadilla, on the railroad line towards Malaga. It is presumed that when this railroad will be in running order it will greatly benefit this community, especially if the Spanish Government should decide to establish custom-houses at Algeciras and the Spanish lines outside the gates of this fortress similar to those existing on the frontiers of France and Portugal.

INTERCOURSE BETWEEN GIBRALTAR AND SPAIN.

That some idea may be formed of the constant important daily intercourse which exists between this fortress and Spain I may state that late police statistics show that 1,887,617 passes were issued to visitors entering this fortress on daily permits during the year 1888, 1,608,004 entering by the land route and 279,613 by sea. I must, however, observe that the larger portion of these visitors consist of laborers, coal heavers, market people, and others engaged in general traffic.

THE CORK INDUSTRY.

A new industry in cork has lately sprung up, in which leading Spanish and native commercial firms in Gibraltar are directly interested to a considerable extent. Extensive warehouses for the storing of cork-wood and machinery for the manufacture of bottle corks have recently been established at the Spanish lines, about a mile distant from this fortress, in Spanish territory, where large quantities of cork have already been stored. The cork is obtained and collected from the valuable trees, which are owned by the representatives of some of the oldest nobility of Spain, who have sold the products of their extensive woods to private individuals for periods reaching as far on as ten years, for which concession large cash advances have already been made. The woods commence at a distance of about 12 miles from Gibraltar, and are of considerable extent.

The railway now in course of construction passes through these woods, which may ere long offer quite picturesque scenery for travelers, especially when the cork trees are bearing acorns, which form the principal food for the fattening of large herds of swine during certain seasons of the year, in this way, also, contributing to the value of this tree, which, like the other kinds of oak trees, are of long and tardy growth. The tree from which the cork is obtained is somewhat abundant in the mountainous districts of Andalusia. It grows to the height of about 30 feet, and resembles the *Quercus ilex*, or evergreen oak, and attains to a great age. After arriving at a certain state of maturity it periodically sheds its bark, but this bark is found to be of better quality when artificially removed from the tree, which may be effected without injury to the tree itself. After the tree has attained twenty-five years it may be barked, and the operation is afterwards repeated once in every seven years. The quality of the cork seems to improve with the increasing age of the tree, which is said to live over one hundred and fifty years. The bark is taken off during July and August.

Cork dust is also obtained from this cork-wood, and is much used in the packing of grapes, which fruit is largely shipped from the eastern coast of Spain, especially from Almeria, during the vintage seasons for the American and British markets.

Number of steam and sailing vessels cleared from the port of Gibralter during the year 1888 and the countries of their destinations.

Whither.	Under British flag.		Under all other flags.	
	No.	Tonnage.	No.	Tonnage.
Steam.				
United Kingdom	1,965	2,143,279	169	120,278
British Possessions:				
East Indies	83	194,734	.....	.....
Australia	25	74,414	.....	.....
Aden	1	59	.....	.....
Malta	24	27,055	1	274
Perim	2	1,588	.....	.....
Ceylon	1	1,401	.....	.....

Number of steam and sailing vessels cleared from the port of Gibralter, etc.—Continued.

Whither.	Under British flag.		Under all other flags.	
	No.	Tonnage.	No.	Tonnage.
Steam—Continued.				
British possessions—Continued.				
Hong-Kong	2	2,997	.....	.....
Sierra Leone	1	556	.....	.....
Other colonies	13	17,890	1	821
France	466	446,475	263	186,604
Holland	280	313,124	51	46,944
United States of America	294	400,255	24	39,560
Spain	441	294,569	284	155,737
Morocco	364	46,459	89	48,402
Italy	162	184,900	58	51,306
Austria	11	16,920	18	12,627
Greece	10	9,312	3	2,398
Egypt	63	83,624	9	5,423
Turkey	40	44,639	4	2,604
Denmark	7	7,433	7	4,148
Russia	45	50,336	14	8,759
Portugal	31	21,215	28	10,272
Belgium	349	372,015	47	40,860
Germany	210	222,284	44	36,163
Sweden and Norway	32	34,508	28	19,276
Brazil	.....	.....	12	15,377
Argentine Republic	2	2,599	30	58,333
Other countries	14	18,448	2	2,323
Total	4,938	5,033,088	1,186	876,489
Sailing.				
United Kingdom	36	6,090	12	2,789
British Possessions:				
Newfoundland	2	275	.....	.....
Australia	1	603	.....	.....
Canada	.....	.....	1	598
Malta	1	74	.....	.....
Jamaica	.....	.....	1	614
West Indies	.....	.....	1	548
France	18	2,638	41	8,501
Holland	1	99	1	529
United States of America	7	5,443	8	4,630
Spain	41	6,919	261	11,743
Morocco	70	3,833	82	3,925
Italy	18	4,082	16	7,198
Greece	3	306	.....	.....
Austria	1	170	.....	.....
Russia	.....	.....	2	991
Portugal	3	241	63	7,149
Germany	.....	.....	3	1,102
Denmark	.....	.....	2	456
Sweden and Norway	.....	.....	5	1,102
Brazil	1	193	1	473
Argentine Republic	1	224	4	1,141
Other countries	.....	.....	2	527
Total	204	31,190	506	54,016

HORATIO J. SPRAGUE,

UNITED STATES CONSULATE, *Consul.*

Gibralter, April 1, 1889.

RIVER AND COAST SHIPPING OF GERMANY.

REPORT BY COMMERCIAL AGENT SMITH, OF MAYENCE.

There has recently been published by the German Government a comparative statement of the number of river, canal, and coasting vessels of the Empire at the close of the years 1877, 1882, and 1887, comprehending all vessels of 10 tons and more, regularly engaged in carrying freight, as well as the passenger ships. According thereto there were at the close of 1877 of such 17,083 sailing vessels and 570 steamers; at the end of 1882, 17,885 sailing vessels and 830 steamers; and at the expiration of 1887 a total of 19,237 sailing vessels and 1,153 steamers.

There thus appears to have been a remarkable increase in steamers from 1877 to 1887 — 102.3 per cent. — while the sailing vessels showed an increase of only 12.6 per cent. The percentage of increase among all the vessels taken together was 15½ per cent. The figures show how rapidly steam-power is taking the place of sail.

The carrying capacity of the vessels is put at 2,057,000 tons for 1887, or an increase of 50 per cent. since 1877. The carrying capacity of the freight steamers is said to have been about 21,000 tons at the end of 1887, against about 14,000 tons at the close of 1877.

The largest number belonging to any one political division of the Empire, at the close of 1887, 4,576 sailing vessels and 95 steamers — a total of 4,671 ships, or 22.9 per cent. of the entire number (end of 1887) — belonged to the province of Brandenburg, and the next largest number to Hamburg, namely, 3,567 sailing vessels and 231 steamers, a total of 3,798 ships, or 18.6 per cent. of the whole number. But the greater part of the Hamburg vessels are small, and in total tonnage rank below those of Brandenburg and the Rhineland respectively, although of the latter there were in 1887 only 1,196 sailing vessels and 186 steamers, or 6.8 per cent. of the entire number of inland and coasting vessels.

Considered by rivers and apart from political divisions, it appears that at the close of 1887 more than half of the vessels belonged to the Elbe, namely, 10,151 sailing vessels and 471 steamers, or 52.1 per cent. of the whole. The Oder had the next largest number, namely, 3,143, or 15.4 per cent. of the whole; but the vessels of the Rhine were near thereto in number, being 3,006, or 14.7 per cent. of the whole number, while the number of its steamers exceeded those on the Oder, being at the end of 1887 275, or 23.9 per cent. of the entire number, against 154 on the Oder, or only 13.4 per cent. of the whole number. The average capacity of the sailing vessels of the Oder is also much less than that of the Rhine boats, the average tonnage of an Oder ship being 96 tons, while that of a Rhine vessel is 209.4 tons.

Of the entire inland and coasting tonnage of the Empire in 1887, among the sailing vessels the Elbe had 47.5 per cent., the Rhine 27.8 per cent. and the Oder 13.9 per cent. Compared to these three rivers and their tributaries

the navigation on the other German streams is slight. According to the statistics of 1887, in the waters of East Prussia the sailing vessels and steamers together amount to 1,052; on the Vistula and its streams to 721; on the East Friesish canals to 507; on the coasts of Pomerania and the east coast of Schleswig-Holstein to 448; along the Weser to 409; along the Ems to 255; along the Danube to 83; on the Lake of Constance to 58, and on the west coast of Schleswig-Holstein to 55.

JAMES H. SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, April 11, 1889.

BUTTER AND CHEESE EXPORTS OF HOLLAND.

REPORT BY CONSUL ECKSTEIN, OF AMSTERDAM.

But few articles the products or manufacture of this country are exported so extensively as butter and cheese. It would be pleasing to me to furnish information as to the quantities and value representing their production and export in 1888, but there is no data for the purpose available at this time, nor, in fact, at any time, so far as concerns an approximately accurate or reliable statement of the total production of the articles under consideration.

Recently issued official statistics of the exports from the Netherlands in 1887 show that the quantity of butter which found its way to foreign markets in that year amounted to 77,974,501 kilograms, and that it was valued at 62,379,598 florins, at an estimate of 80 florins per 100 kilograms. The above figures stand for or represent the quantity and value of all exports of butter, artificial as well as natural butter being classed together under the head of butter, eatable.

Should the bill now pending in the States General, which is intended for the protection of those interested in the production and export of natural butter, become a law, the official statistics of the exports will hereafter be likely to be changed by noting the two articles separately.

Of the exports, as above given, the great bulk went to England. The shipments to that country in 1887 reached 66,623,352 kilograms, valued at 53,303,486 florins. The balance found its way to a number of other countries, notably to Java and other Dutch colonies.

The consul-general of the Netherlands at London, in a recent report to his Government, speaks of the imports of Dutch natural butter into England as decreasing in 1888, stating at the same time that they amounted to 359,022 cwt., valued at £1,775,509, in 1886, against only 162,471 cwt., valued at £843,854, in 1887. The consul-general says that "as to the imports of artificial butter quite the reverse has been the case, as they footed up, in 1887, to 1,175,087 cwt., valued at £3,556,880, against but 835,328 cwt., valued at only £2,771,488, in 1886."

CHEESE.

The total exports of cheese, according to the statistics emanating from the same official source already above alluded to and also covering the year 1887, amounted to 30,534,805 kilograms, and reckoned at 35 florins per 100 kilograms, represented a value of 10,687,179 florins. Fully one-half of this quantity was shipped to England, about 3,250,000 kilograms to France, 1,500,000 kilograms to Hamburg, and the remainder to the several other countries in and out of Europe. To the United States the exports during the same period of time amounted to $26,505.45, and in 1888 to $33,826.35.

I now quote again from the above-mentioned report of the Dutch consul-general in London, who, in regard to the imports of Dutch cheese into England, states: "Regarding the imports of cheese there is, thus far (up to a certain period in 1888), cause for satisfaction." The consul observes that, "although the Holland product lacks the peculiar taste so highly favored by the English people, and in consequence thereof the market takes only the low grades, the imports since 1882 were never so large as in 1887." The following are the figures representing their quantity and value, from 1882 to 1887, inclusive:

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Cwt.			*Cwt.*	
1882	310,735	£866,061	1885	336,158	£834,308
1883	292,515	824,576	1886	318,743	764,871
1884	319,441	893,416	1887	362,109	883,977

OLEOMARGARINE AND COTTON-SEED OIL BUTTER.

Oleomargarine.—Those operating in this article or handling it in the market of this country had but little cause to be satisfied with the result of their transactions during the past year, as it proved to be quite the reverse of the preceding year (1887), which was exceptionally favorable, alike to importers, dealers, speculators, and to butterine manufacturers. The extraordinary drought during the season of 1887 caused a considerable advance in the prices for natural butter, in consequence whereof large sales of artificial butter could readily be effected.

In 1888, however, the situation was just the contrary, as the stock of cream butter was so large and prices of it constantly so low, butterine manufacturers experienced great difficulties in the disposal of their produce. Certain parties here interested in the trade are of the opinion that the recently enacted English law, which provides, amongst other things, that butterine can only be imported into that country as margarine, contributed to the unpropitious outcome of last year's business, inasmuch as consumers there had to be made accustomed to or familiar with the new name. A butterine bill is at present also pending in the States General of the Netherlands, having been introduced several months ago, but it is doubtful that it will pass

in its present form or without being amended in certain particulars. Great price fluctuations did not occur during the year; for prime brands or finest grades American oleomargarine the prices ruled between about 65 and 47 florins per 100 kilograms, somewhat inferior goods selling even as low as 39 and 40 florins.

The imports of the article from the United States amounted in 1888, at Rotterdam, to 104,000 tierces, about 15,600,000 kilograms; at Amsterdam, 69,000 tierces, about 10,350,000 kilograms; total, 173,000 tierces, about 25,950,000 kilograms, against a total import for Rotterdam and Amsterdam in 1887, of 184,600 tierces, about 27,800,000 kilograms; 1886, 121,480 tierces, about 18,300,000 kilograms; 1885, 121,287 tierces, about 18,280,000 kilograms. The stock on hand (first hands) is stated to have consisted of about 8,787 tierces, about 1,320,000 kilograms, on the 31st of December, 1888.

It is again repeated to me that the imports of European oleomargerine can not be given with any certainty, as the article comes here direct from the foreign producers to the inland butter manufacturers, but it is said that it may be ventured to be taken as granted that in the aggregate they amount to about the same quantity as the imports from the United States.

Cotton-seed oil.— From Rotterdam it is reported that the shipments and receipts there and at Amsterdam consisted again of large quantities of the American product; that it readily finds its way into the hands of butter manufacturers in this country, and that it commanded constantly rising prices, selling at from 34 to 41 florins per 100 kilograms during the year for the refined article.

The imports in 1888 are put down at about 55,000 barrels, or about 9,000,000 kilograms. Several shipments, said to be the Turkish or Egyptian product, were in the course of the year brought from England, but the quality of it was found to be inferior to the American.

D. ECKSTEIN,
Consul.

UNITED STATES CONSULATE,
Amsterdam, January 16, 1889.

RAILWAYS IN VENEZUELA.

REPORT BY CONSUL PLUMACHER, OF MARACAIBO.

Referring to previous dispatches from this office respecting the projected railway from Lake Maracaibo to the city of Merida, I now have the honor to report that the work has already commenced, the contractors being a company formed in Paris with the title of "Compagnie Francaise des Chemins de fer Venêzuéliens."

The original concession was granted to the Duke de Marny, son-in-law of General Guzman Blanco, who transferred his privileges to the above-mentioned company. The engineer-in-chief, with a complete staff and a large amount of material, arrived in this city last month, and the preliminary

work has already begun. When the terms of the contract became generally known, however, there immediately arose a strong opposition on the part of the people, who, although fully appreciating the incalculable advantages of direct railway communication between Lake Maracaibo and the rich coffee regions of the Cordillera, were very unfavorably impressed with the extraordinarily exceptional privileges granted to the contractors. I inclose translation of an article which appeared in the Fonografo, a leading Maracaibo newspaper, giving a tolerably accurate idea of the general feeling of the people. It is true that all railways constructed in Venezuela have been favored with a guaranty clause in the contracts, assuring to the contractors an interest of 7 per cent. upon the capital invested, but it is complained in this case that the estimate of the cost of construction is excessive. Of the 170 kilometers comprised in the line, the first 60 have been estimated to cost $60,000 each and the remaining 110 $70,000 each.

It must be acknowledged that the conditions, topographically and otherwise, are peculiar, as one part of the road will pass through swamps and morasses, and another will necessitate heavy rock work in order to climb the Cordillera, but even taking all this into consideration it is to be regretted that American capitalists did not take this enterprise in hand. For years this consulate has called attention to its importance, and to other opportunities for successful investments, but these suggestions have been utilized almost invariably by foreigners and not by Americans, for whose knowledge and benefit they were intended.

In this consular district there is now one railway in active and successful operation (that of La Ceiba), which will probably soon be extended to Valera by a French company. The Merida road is French property, and there is still another about to be constructed from one of the tributaries of the lake to the city of San Cristobal, also under a French contract. We are thus losing constantly excellent opportunities of augmenting our commercial prestige in this Republic. The French, particularly, have recently shown much activity in Venezuelan enterprises, and the only coal deposit where serious efforts have been made for the extraction of the mineral is granted to a Paris company.

In this connection I beg to state—as indicative of the interest taken by Europeans in these matters—that my report of February 3, 1888, referring to commercial and industrial matters in this consular district, published by the Department, attracted the attention of the British Government, and the foreign minister recently sent a personal cablegram to the British consul at this port, requiring detailed information respecting the petroleum deposits referred to at length in my above-mentioned dispatch.

It would be gratifying to me were our own people to take advantage of these numerous opportunities for the enterprises of railways, coal mines, petroleum deposits, etc., but as it has often been mentioned in consular reports from various parts of South America, the information thus furnished for the benefit of the capitalists, merchants, manufacturers, and exporters of the United States is acted upon more by Europeans than by our own people.

To return, however, to the railway, which is the immediate subject of this dispatch, I shall endeavor to keep the Department informed as to its progress and chances of completion. There are other details in connection with the enterprise, such as the alleged exclusive privilege of steam navigation on the lake, which are not yet sufficiently clearly defined for me to inform the Department with accuracy, but I think I can safely say that such a monopoly can not possibly exist, especially as it would conflict directly with the interests of an American company chartered and incorporated in New York.

E. H. PLUMACHER,
Consul.

UNITED STATES CONSULATE.
Maracaibo, March 8, 1889.

[Inclosure in Consul Plumacher's report.]

REALITY VERSUS ILLUSIONS.

(From the Maracaibo Fonografo. — Translation.)

The indisputable voice of figures in the matter of the contract for the railroad from Merida to the River Escalante.

According to the calculations which serve as a base for this contract, the distance fixed is 170 kilometers. We believe this to be exaggerated, as, counting curves, ascents, and descents, the true distance is now calculated to be 150 kilometers (30 leagues). Let us concede, however, in order not to be accused of exaggerating, that the distance is really 170 kilometers.

According to the price stipulated in the contract the railroad is to cost: For the first 60 kilometers at 300,000 bolivars, 18,000,000 bolivars;* for the remaining 110 kilometers at 350,000 bolivars, 38,500,000 bolivars; total, 56,500,000 bolivars. But the cost of a kilometer of railway should not be more than £4,000 sterling, or 100,000 bolivars, according to the most competent authorities and calculations, and thus the true cost of this road should be, 170 kilometers at 100,000 bolivars, 17,000,000 bolivars. There remain then 17,000,000 bolivars out of the 56,500,000 bolivars collected by the contractors, leaving a difference of 39,500,000 bolivars in which the nation is injured by this contract. There is, however, something more to be added. From the commencement of the work the nation will have to pay the guaranty of 7 per cent. upon the total cost, that is to say, upon the 56,500,000 bolivars estimated, which is equivalent to a yearly payment of 3,955,000 bolivars, which being multiplied by 99 (the number of years of duration of the contract), gives the enormous sum of 391,545,000 bolivars, which without doubt the nation will be obliged to pay for this contract; a fabulous amount which our poor imagination can not comprehend, and which will burden the children of the children of our children. And further, this 7 per cent. guaranty is free of all charges, and as without doubt the traffic of this railway will not suffice to pay the cost of management and conservation, it is clear that the deficit must be paid every quarter, which is another matter to be considered, as there will be certain quarters during which, by reason of good crops, some profit might be obtained to balance the loss in others, as would happen if the calculations were made by years, but this is not the case, and all the advantages are in favor of the contractors and against the nation. But let us concede what is really impossible, that the traffic of the railway gives sufficient to pay the expenses of management and conservation, and thus the nation will have to pay annually at 7 per cent. only 3,955,000 bolivars. Let us now divide these 3,955,000 bolivars among the 30,000 cargas (a carga is about 250 pounds), which is the maximum of traffic by this road, and we have a quotient of 111.84 bolivars, or $27.96 pesos (1 peso = 77.7 cents American money), which the nation will be obliged to pay for each carga.

* The bolivar = 19.3 cents.

MAGNIFICENT BUSINESS.

And it is here in order to ask if any small shop-keeper can not comprehend that, with the annual sum of these 3,955,000 bolivars, the same railroad could be built within five years, and without the necessity of presenting this sum to the foreign contractors who thus suck the very blood of the Venezuelans.

Still more, these contractors are satisfied with nothing, and consequently they are granted an extra gift of a strip of 500 meters of public land on each side of the line.

And again, for twelve years they will have the exclusive privilege of steam navigation in the lake, and we are thankful that this does not include all methods of navigation as the primary contract really did. The contractors, however, became fearful, on account of the resolute attitude of the people, and in subsequent explanations expressed themselves satisfied with steam navigation, and they do us the favor to allow us to navigate in a poor sailing craft. Thanks! Messrs. Contractors.

To resume, progress, as far as this railway is concerned, means ruin. Progress and ruin are contradictory terms, and consequently in the present case we can not accept the last and only reasoning of those who, in order to justify similar contracts, say it is better to receive some advantage and not to be robbed.

THE ENGLISH COAL-FIELDS AND WATER-GAS.

REPORT BY CONSUL WIGFALL, OF LEEDS.

The following article is taken from a recent issue of the Yorkshire Post, a leading provincial newspaper published at Leeds, and gives details of the English coal production during the year 1888, with a comparison for the preceding year. Reference is also made to the very interesting question of the reserve supply of coal and the rate at which the current demands are intrenching on its volume.

PRODUCTION OF COAL IN 1888.

A correspondent sends us the following:

The official return of the output of coal in the United Kingdom and Ireland has just been issued, and the prominent part it plays in the manufacturing industries, not only of this locality, but in general, should cause some interest to be taken in its progress. Those interested in the trade of the country may be somewhat surprised that such a large increase as 7,815,407 tons took place last year, the output for 1888 being 169,935,219 tons, as against 162,119,812 tons in 1887, the increase, in fact, being at the rate of 4.8, or nearly 5, per cent., a much heavier increase than under the condition of trade generally might have been expected. If the coal production of the country continues to increase as it has done lately, and seems likely to do in the future, the question of the duration of our coal supplies will assuredly come to the front again; but, although the end may come sooner than generally expected, it may be a comfort to know that if even the most pessimistic view be taken it can not come in our time. There are, however, many difficulties to encounter in dealing with the matter, for it is only since 1854 that any trustworthy records of the output have been kept, since which time the question of the duration of our coal supply has been constantly cropping up. As early as 1863 Sir William Armstrong, in his address to the British Association for the Advancement of Science, drew attention to the rapidly increasing output of coal, and, assuming an arithmetical increase like the preceding years to continue, the coal to a depth of 4,000 feet would be exhausted in two hundred and twelve years from 1863, but long before that period the scarcity of coal would be felt. Varied were the views taken on the matter, Professor Hull, who is looked upon as an authority in the matter, giving it as his opinion in 1864 (when the output

had reached 90,000,000 tons) that the annual output would never go beyond 100,000,000 tons, an opinion which was falsified only two years later, when the output was considerably in excess of 101,000,000 tons. In 1865 Professor Jevons caused some alarm by pointing out that the annual increase was geometrical, and, basing his calculations on recent returns, he came to the conclusion that our coal supply would be exhausted in one hundred and ten years. The result was the appointment, in 1886, of a royal commission to inquire into the probable duration of our coal supply, and in the report, which was issued in 1871, it was stated that at a depth of 4,000 feet, the probable limit of successful working, there was an available supply of 139,000,000,000 tons of coal, and at the rate of the output then existing, namely, 110,000,000 per year, the supply would be sufficient to last twelve hundred and sixty years. Since that date, however, the output has continued to increase, and seems likely to do so in the future, so that the estimate formed by the royal commission in 1871 will be considerably in excess of the probable duration of our coal fields, despite the greater exercise of economy and the growing use of steel which has characterized the past few years. It is not long since a ton of iron rails required the consumption of five tons of coal, but now we are told that a ton of steel rails only costs about half that quantity of fuel, to say nothing of the increased wear of the latter.

From the following table it will be seen that most of the districts show an increase, though by no means uniform, whilst the only districts showing a decline are North Staffordshire, Cheshire, and Shropshire, the falling off being 34,641 tons:

Districts.	1887.	1888.
	Tons.	*Tons.*
Northumberland, North Durham, and Cumberland	15,310,026	17,915,571
South Durham and Westmoreland	21,008,876	21,501,886
North and East Lancashire and Ireland	9,893,631	10,173,161
West Lancashire and North Wales	13,693,321	13,835,867
Yorkshire	20,104,713	20,576,375
Notts, Derbyshire, Leicestershire, and Warwickshire	17,214,907	18,095,240
North Staffordshire, Cheshire, and Shropshire	6,183,200	6,148,559
South Staffordshire and Worcestershire	9,019,106	9,773,788
South Wales, Gloucester, and Somersetshire	28,007,056	29,595,668
East Scotland	15,268,186	15,815,372
West Scotland	6,216,790	6,503,732
Total	162,119,812	169,935,219

The marked increase in Northumberland, North Durham, and Cumberland is due to the disastrous strike which took place in 1887, whilst that of South Wales is no doubt due to the better demand for steam coal, which made its appearance in that district during last year and may be said to be making itself felt in most of the other districts. The most uniform progress compared with several years ago appears to have been made in Yorkshire, Derbyshire, Notts, South Wales, and Scotland, which, with the exception of the last named, are the principal districts with the best supplies for future requirements. The coal-fields of Northumberland, Durham, and Staffordshire, the oldest in the country, have made but little progress lately, but these districts are not by any means worked out, and with better prices ruling the coal hitherto unworked on account of mining difficulties will probably soon be opened. It is doubtful, however, whether these districts so long worked will be able to keep up with the newer districts, where unusual mining difficulties are not likely to be met with for some years to come.

So far as regards the evolution of force, the enormous comparative waste of the products of combustion which accompanies even the most advanced methods of utilizing fuel known at the present day would seem to afford a margin to the efforts of scientific investigation which it can scarcely fail, in course of time, to enter upon and make available,

If the small proportionate quantity of the total heat energy resident in coal, which it is now considered possible to control (say 20 or 25 per cent.), could be multiplied even by 2 or 3 there would still remain a surplus for waste, but the same work would consume only one-half or one-third of the coal, which would, of course, be tantamount to multiplying as many times the available reserves now known to exist.

If coincidently a corresponding increase could be accomplished in the economy of application, whereby a given force should be made to do effective work beyond the present limit, in such event the question of supply would come to wear a much less ominous front than is lent to it by figures like those which have been cited.

These propositions are, of course, truisms, but, incidentally to the subject, it may be added that the incidence of this more or less remotely threatened scarcity appears already to be making itself manifest by turning men's thoughts towards auxiliary sources. For example, it has been recently announced that water-gas, for whose use great advantages are claimed, can now be manufactured in the Leeds district at a cost of somewhat less than 4*d.* sterling (or about 8 cents Federal currency) per 1,000 feet.

Annexed is a statement derived from a recent advertisement, and giving—

The mechanical process followed in producing water-gas consists in charging the generator with fuel and fire, and blowing it up to a bright heat for a few minutes—experience shows that ten minutes is the best period. During this time a gas known as producer gas is generated, which passes away by the outlet to any furnace—boiler or other—where it is desired to burn it. This gas is of about the same chemical composition as ordinary Siemens gas, and may be used for any of the purposes to which that is applied. It has an average of 31 per cent. combustible gas, and may, if desired, be stored in a holder and distributed for consumption through regenerators, as is commonly done. At the termination of the blowing period, the wheel M is turned, and through the mechanism L the wind-valve O, and the exit-valve G are closed. The position of the slide-valve E is changed, so that the communication between the generator and the air-pipe is closed, and that between the generator and the gas-pipe, communicating with the scrubber, is opened, and the steam-slide K is opened. These operations are performed in regular sequence, and without the possibility of error, and the mechanical construction of the slide-valve E is such that should the blast-valve O and also the slide-valve, be not absolutely tight, no air can possibly get from the blast side to the gas side by reason of the channels in the valve, which communicate with the air. The channels also permit the residue of air which is in the ports and passages after blowing ceases to escape before the gas comes down, so that no mixture of gas and air can take place, and the same escape of residual gas takes place after gas making.

The valves being thus set for gas-making, the attendant regulates the quantity of steam by the hand-wheel N to the pressure necessary to force the gas into the holder; gas is instantly generated at a great rate. At Leeds forge the make is about 1,500 cubic feet per minute; but the make will depend upon the size of the plant. Gas is made for four minutes, which is found in practice to be the best period, the steam is then shut off and the lever reversed to its former position, thus reversing the position of the valves, and the fuel in the generator, which has been cooled by the passage of the steam, is again blown up for a ten minutes' period; and so the process goes on, alternately blowing hot and making gas or cooling down.

Periodically a hopper or two full of fuel is let into the generator by raising the lid I, leaving the stopper H in position and filling the hopper. The lid is now lowered and the stopper raised, working it up and down by the hand-wheel and chain to assist the fuel to fall. It is

best to keep the fuel high in the generator, as a tall column of fuel produces better gas than a short column. At intervals of about six hours it is necessary to clean out the clinker from the bottom of the generator. This is done through the doors PP, and usually occupies about fifteen minutes. The generators may be worked by ordinary laborers after a few days' instruction, and no special skill is necessary in the manipulation of the plant.

The average yield of water-gas from common gas-works coke is 34,000 cubic feet to the ton, and the production of each generator in use at Leeds forge is 22,000 cubic feet per hour, or 528.000 per day, the cost of the gas being under 4*d* per 1,000, including fuel, water, wages, superintendence, depreciation, and interest. Each cubic foot of water produces 2,250 cubic feet of gas, or one ton of water (which in Leeds costs 5 farthings) will produce over 80,000 cubic feet of gas. The fuel required to produce this amount of gas is 2⅓ tons, costing say 20*s*; labor costs 2*s*. 6*d*.; interest and depreciation costs 5*d*. per 1,000 cubic feet, on 86,000 is 3*s*. 4*d*, allow 5 per cent. for contingencies, and the cost of this quantity of gas is about 26*s*. 3*d*., or about 3*s*. 9*d*. per 1,000 cubic feet. In this estimate the value of the producer gas generated in blowing the fuel hot is not taken into consideration, but it is set off against the amount of fuel which would be required to generate steam for driving the engine and to be used in making gas, and which is not included in the amount of fuel named above.

At the Leeds forge this producer gas is used for firing the four furnaces of two 30 feet by 7 feet 6 inch Lancashire boilers, fitted with Foxe's patent corrugated furnaces, forming part of a bench of six boilers supplying steam to a portion of the works. Before applying the gas it was difficult, when all the engines, mills, steam-hammers and presses were at work, to keep steam up to 60-pound pressure, and the consumption of coal for the six months was 6,153 tons. Since applying gas the steam has been evenly maintained without any great exertion, and the consumption of coal during the six months of using gas was 5,258 tons, or a saving of 895 tons.

Applying approximately the figures here set forth and expressing amounts in American money, we shall have, water, 1 ton, 2½ cents; fuel, 2⅓ tons, $4.87; labor, 61 cents; interest and depreciation, 81 cents; contingencies, say 8½ cents; total, $6.40 for a product of, say 80,000 cubic feet, or at the rate of 8 cents per 1,000 cubic feet. The statement from which I quote proceeds:

During eight months 752 tons of coke were used in the generators and 25,575,600 cubic feet of gas made. In the production of water-gas three-fourths of the fuel charged into the generator is consumed in blowing the generator hot, and it is the product from this quantity which is burnt under the boilers and the combustion of which has so materially affected the coal consumption at the boilers. It is apparent that the above saving can not be due to the application of gas, but owing to the superior quality of the fuel, coupled with the perfect combustion of the gas as compared with the very imperfect combustion of the coal, it is calculated that 70 per cent. of the total saving is due to the application of gas to the boilers.

* * * * * *

Among the many purposes to which water-gas may be applied are melting and refining of iron, steel, copper, silver, gold, etc.; welding steel and iron.; Smiths' forges—brazing, etc.; melting glass; calcining cement, lime, etc.; burning porcelain, china, high-class pottery, tiles, bricks, etc.; driving gas engines; lighting houses, streets, churches, caverns, etc.; for many of which purposes it is in use at Essen, at Hœrde, at Furstenwolde, at Gelnhausen and Warstein in Germany, at Witkowitz in Austria, at Winterthur in Switzerland, at Paris, at Leeds, and in over three hundred cities and towns of the United States of America, the last to adopt it being the State of Massachusetts, in which, formerly, laws existed prohibiting its use.

The application of water-gas to industrial purposes is unlimited in extent. Whether the heat required be intense or moderate, the gas is under such perfect control that it may be safely applied to any purpose whatsoever. In iron-works, where perhaps the highest temperatures

are required, the water-gas has proved itself an invaluable aid to the production of the best qualities of material, and not only so, but it has cheapened the production by providing the means of a vastly increased output on a given capital outlay in plant.

It is these processes and such as these that the manufacturer in coming time will be compelled to undertake in order to counteract or in some sort mitigate the tremendous destructiveness of modern methods. To gas, and to that still further sublimation of the powers of heat called electricity, it would seem probable that production must have recourse for economy in expenditures of the crude force supplied by nature in the oil and coal deposits. That such recourse will have successful issue would not appear doubtful, if we may judge from the past history of the race. Through every age and with only temporary interruptions the day's deed has furnished the day's need, and we may confidently trust that such will be the story of the future.

F. H. WIGFALL,
Consul.

UNITED STATES CONSULATE,
Leeds, April 25, 1889.

TARIFF OF MOZAMBIQUE.

REPORT BY CONSUL SMITH.

IMPORTS TARIFF.

I have the honor to inclose to you a translation of the new customs tariff for the province of Mozambique. I observe that the classification adopted is, in its general features, that of the customs tariff of Portugal, which came into force in October, 1887. A brief comparison of the new tariff and the old one will best show the principal differences between them, and enable one to see more readily and clearly where the principal changes have taken place.

The duty on printed cottons is reduced from 17 cents to 13 cents per kilogram (1 kilogram = 2.205 pounds), and I may add here that this is the only point in which the new tariff shows a reduction in duty.

Beads of all kinds and glass trinkets, used for barter with the natives, remain at 5 cents per kilogram. Specific duties take the place of ad valorem duties on all woolen, linen, and silken goods, which heretofore were subject to a 15 per cent. ad valorem duty indiscriminately. These items in the new tariff are now classified under twenty-seven heads, from Nos. 9 to 36, inclusive, with duties ranging from 16 cents to $4.40 per kilogram.

Another main point of change between the old and present tariff is in the duties on wines and spirits, the former being taxed in the old tariff 4 cents per liter (1 liter = 2.113 pints), irrespective of quality, whether bottled or in casks; whereas fermented beverages of all kinds (wine excepted) were subject to a duty of only 2 cents per liter. In the new tariff wines and spirits are divided into ten classes, and the duties go as high as 30 cents per liter, as in the case of champagne and the more highly fortified spirits.

The former duties on tobacco remain the same in the new tariff only as regards Portuguese and colonial grown tobacco, while foreign tobacco is raised in the new tariff nine and six fold, being $1.80 per kilogram for tobacco in the leaf and $3.60 per kilogram if manufactured in any form.

Rice, untaxed in the old tariff, is now one-half cent per kilogram, and the same duty is levied on dried pulse. Flour, also untaxed heretofore, has now an ad valorem duty of 6 per cent. placed upon it.

Summing up briefly, the greatest changes are to be seen in the duties on woolen, linen, and silken goods, from Nos. 9 to 36, inclusive; in those leviable on wines and spirits, Nos. 53 to 62, inclusive; on tobacco, Nos. 100 to 104, inclusive; on guns and gunpowder (now in a state of blockade in this province), Nos. 85 to 87, inclusive; and on rice, pulse, and ghee, Nos. 38, 46, and 49.

The above citations are all concerning table A, or the duties on imports, which, taking it all round, great fault can not be found with it, I think, for, though less simple and higher than the former tariff in force in Mozambique, it is lower than that of the colony of Natal, which boasts of a low tariff, and incomparably lower than the customs tariff in Cape Colony.

EXPORT TARIFF.

I am doubtful if the same can be said of table B, or the duties leviable on exports, and I fear that the natives in the province will suffer much if the new duties are held in force very long, because, at the present time, one might say that the entire native population, and, indeed, many others, depend wholly upon the produce brought down by them to the coast. Every known product in the province is made taxable.

The chief articles of export, such as india-rubber and ivory, are taxed so heavily, and the margin of profit is so greatly narrowed, that their collection will probably be checked considerably. The industries which have not as yet even found a firm footing and are at present in their extreme infancy, such as the exportation of pearls, tortoise-shells, ebony, coffee, gold dust, and fibrous plants, are all handicapped in their growth by the imposition of some degree of export duty.

It is only necessary to call attention to the remarkable difference between the imports and exports of this province and the great excess of the former over the latter to show clearly the state of the trade as it now stands. In 1885—the last statistics I can find published—the imports into the province of Mozambique were valued at $1,696,900, and the exports were valued at $1,118,184, or, in other words, the imports exceeded the exports by one-third.

There can be no doubt that by far the greater proportion of the capital and enterprise engaged here is employed in the development of the country, and anything tending to restrict the output of the country's natural products will most certainly end in retarding the advancement of this province.

New customs tariff for the province of Mozambique.

A—IMPORT TARIFF.

No.	Articles.	Unit.	Duty.
	CLASS I—TEXTILES.		
	Cottons.		
1	Unbleached	Per kilogram	$0.09
2	Bleached or white	do	.10
3	Dyed in the thread	do	.16
4	Stamped or printed	do	.13
5	Open or transparent (muslin)	do	.50
6	Thick, such as blankets, quilts, and other similar articles	do	.30
7	Duck and canvas for sails	do	.10
8	Ribands	do	.16
	Linens.		
9	Unbleached	do	.16
10	Bleached or white	do	.20
11	Laces, net, trimmings, etc	do	.55
12	Damasked linens	do	.27
13	Scotch damask	do	.38
14	Drill and canvas for sails	do	.12
15	Ribands	do	.22
16	Linen fabrics not mentioned	do	.30
	Woolens.		
17	Shawls, cashmere, etc	do	.40
18	Baize and blankets	do	.45
19	Trimmings	do	.70
20	Ribands or braids	do	.55
	Silks.		
21	Plain white or in colors	do	2.70
22	Embroidered, white or colored	do	3.30
23	Silk velvet, white or colored	do	3.80
24	Silk handkerchiefs, white or colored	do	2.20
25	Plain handkerchiefs, white or colored	do	2.70
26	Embroidered handkerchiefs, white or colored	do	3.30
27	Similar articles, not specified	do	4.40
28	Silken articles made up will be cleared under usual silk, and will pay more than 25 per cent. over the corresponding duty leviable under this tariff.		
	Silk and wool.		
29	Fabrics in which silk predominates	do	1.80
30	Fabrics in which wool predominates	do	1.10
	Silk and linen.		
31	Fabrics in which silk predominates	do	1.30
32	Fabrics in which linen predominates	do	.90
	Cotton and silk.		
33	Fabrics in which silk predominates	do	1.00
34	Fabrics in which cotton predominates	do	.55
	Cotton and linen.		
35	Fabrics in many proportions	do	.20
36	Made-up articles of the above classified lists will pay 10 per cent. more than the corresponding duty of this tariff.		
	CLASS II—PROVISIONS.		
37	Rice in husks	do	.00½
38	Rice, cleaned	do	.00½
39	White sugar	do	.04
40	Raw sugar	do	.03
41	Sweet oils	Per liter	.03
42	Honey or molasses	do	.09
43	Coffee in the bean	Per kilogram	.04
44	Tea	do	.20
45	Drugs	Per kilogram	.91

New customs tariff for the province of Mozambique—Continued.

A—IMPORT TARIFF—Continued.

No.	Articles.	Unit.	Duty.
	CLASS II—PROVISIONS—continued.		
46	Dried pulse	Per kilogram	$0.00½
47	Preserved provisions	Ad valorem	6 per cent.
48	Butter	Per kilogram	.03
49	Butter from India	do	.02
50	Cheese of any quality	do	.04
51	Articles of food of any kind, not specified above	Ad valorem	6 per cent.
	CLASS III—BEVERAGES.		
52	Vinegar	Per liter	.02
53	Liquors of any kind, cognac, rum, gin, in any vessel	do	.15
54	Spirits, from	do	.15
55	do	do	.23
56	do	do	.30
57	Claret in casks or bottles	do	.04
58	Strong wines, and others, not classified above	do	.05
59	Champagne	do	.30
60	Vermouth, cider, etc	do	.05
61	Fermented and gaseous liquors	do	.03
62	All liquors not mentioned in the above list	Ad valorem	10 per cent.
	CLASS IV—METALS.		
63	Precious metals, raw, unworked, or worked up	do	10 per cent.
64	Pig and sheet iron, tin-plate	Per kilogram	.01
65	Iron-ware, japanned, enameled	do	.04
66	Common iron-ware	do	.02
67	Iron nails	do	.01
68	Copper or brass, wire or nails	do	.10
69	All copper utensils	do	.30
70	Zinc plates or sheets	do	.01
71	Zinc-ware	do	.06
72	Lead in plates, sheets, or bars	do	.00½
73	Lead, worked up, manufactured	do	.04
74	Leaden bullets or shot	do	.00½
75	Corrugated iron, roofing, etc	do	.01
	CLASS V—MISCELLANEOUS.		
76	Hemp cables of white yarns	do	.03
77	Hemp cables of tanned yarns	do	.02
78	Hemp cables of any other description of yarn	do	.01
79	Cards of every quality	do	.02
80	Playing cards	Per pack	.03
81	Beads of all kinds, glass-ware, etc	Per kilogram	.05
82	Vessels new or navigable	Ad valorem	5 per cent.
83	Unnavigable or condemned vessels	do	4 per cent.
84	Mirrors		15 per cent.
85	Guns, barrels of guns, revolvers, etc	Per kilogram	2.50
86	Guns of superior quality	Ad valorem	20 per cent.
87	White metal in sheets	Per kilogram	.07
88	White metal, manufactured	do	.09
89	Musical instruments	Ad valorem	10 per cent.
90	Crockery-ware of ordinary or superior quality	do	6 per cent.
91	Kid gloves	Per pair	.10
92	Writing-paper, white or tinted	Per kilogram	.03
93	Writing-paper, not specified	do	.01
94	Perfumery of all kinds	Ad valorem	20 per cent.
95	Petroleum	Per liter	.00½
96	Pistols and pistol barrels		.50
97	Gunpowder	Per kilogram	.15
98	Soap	do	.00½

New customs tariff for the province of Mozambique—Continued.

A—IMPORT TARIFF—Continued.

No.	Articles.	Unit.	Duty.
	CLASS IV—MISCELLANEOUS—continued.		
99	Marine salt	Per kilogram	$0.00½
100	National tobacco, prepared but not made up	do	.20
101	National tobacco made into cigars	do	.60
102	National tobacco made up into any other form	do	.40
*103	Foreign tobacco in leaf	do	1.80
104	Foreign tobacco made up in any way	do	3.60
105	Umbrellas, sun hats, etc., if covered with silk	Each	.20
106	Umbrellas, sun hats, etc., if covered with other materials	do	.10
107	Candles of any quality	Per kilogram	.03
108	Glass, sheets or plates	do	.02
109	Every description of articles not classified or mentioned	Ad valorem	6 per cent.

B—EXPORT TARIFF.

			Per cent.
1	Oil seeds of all kinds	Ad valorem	1
2	Orchilla	do	2
3	Gums	do	2
4	Hides and skins	do	2
5	India-rubber	do	5
6	Wax	do	5
7	Cowries	do	5
8	Pulse or cereals	do	5
9	Rhinocerous horns	do	10
10	Hippopotamus teeth	do	10
11	Tortoise shell	do	5
12	Precious stones and pearls	do	6
13	Ivory	do	10
14	Gold dust	do	3
15	Auriferous quartz	do	2
16	Columba	do	4
17	Coffee	do	2
18	Coin	do	1
19	Ebony	do	5
20	Tobacco grown in the province	do	2
21	Salt	do	1
22	All products not specified in above list		Free.

ERNEST W. SMITH,
Consul.

UNITED STATES CONSULATE,
Mozambique, February 18, 1889.

THE SECTION ZULIA, VENEZUELA.

REPORT OF CONSUL PLUMACHER, OF MARACAIBO.

The section Zulia, one of the political divisions of the Venezuelan Federation, of which Maracaibo is the capital, is divided into seven districts, each being independent as regards local government, viz: Maracaibo, Urdaneta, Guzman Blanco, Colon, Suere, Miranda, and San Rafael, which are hereinafter treated in the order given:

1.—DISTRICT OF MARACAIBO.

Population, etc.—This includes the city of Maracaibo and its environs. The city has now a population of about 40,000 souls, and may be divided into three sections, north, south, and center, the last of which includes the mercantile establishments and the public buildings, while the others compose the residential districts, and the lake coast is dotted with many pretty villas for a long distance from the business center.

Harbor and lake.—The harbor of Maracaibo, although not accessible to large ocean craft on account of the bar at the entrance of the lake, is unequaled for safety and commodiousness. When the bar is once passed there is room to anchor all the navies of the world, and a depth of water for nearly 100 miles sufficient for the largest vessels in existence, and, as the lake is free from severe storms, its whole extension may be considered as a harbor unsurpassed in any part of either hemisphere.

Public buildings.—The churches and public buildings of Maracaibo are worthy of notice, and the Government house or palace, situated in the Plaza Bolivar, one of the most attractive public squares in South America, is notable for its pure Doric type of architecture and excellence of construction.

Cemeteries.—Of cemeteries there are four, one of which is owned by an association of foreigners.

2.—DISTRICT OF URDANETA.

This district, lying south of Maracaibo, formerly was a part of the jurisdiction of the capital, but in 1872 it was given local autonomy on account of its growing importance.

Soil.—The soil is dry and sterile, and agriculture has made, on that account, but little progress, but with systematized irrigation there is no doubt that abundant crops could be produced. It is a peculiarity of these lands that even in the most apparently uninviting and sterile tracts it is only necessary to irrigate in order to obtain excellent harvests. The ground is impregnated with nitrates and phosphates, and, as on the coast of Peru, manifold productions can be grown in apparently a desert sand provided a generous supply of water can be given to the soil.

Goat breeding.—In the district of Urdaneta the breeding of goats is the chief industry.

Dividivi.—The dividivi tree, whose bean is of such great value on account of the large proportion of tannin which it contains, is scattered abundantly in all sections, and its collection gives employment and large revenues to the inhabitants of the district.

Woods.—Valuable woods also exist, in which, indeed, the entire section abounds. Detailed reference to this inexhaustible source of wealth will be made in another part of this dispatch.

3.—DISTRICT OF GUZMAN BLANCO.

Mines and Mining.—This district is more generally known as Perijá, and is especially favored by nature, as regards facilities for mining, grazing, and agriculture.

In some parts it is heavily timbered, and in others there are large tracts of prairie covered with the most excellent grasses. Its forests abound in gums and balsams, and the business of gathering orchids has become profitable. Gold has been taken from its rivers, and there is every reason to believe that mining, both hydraulic and quartz, could be made exceedingly profitable. Coal is also very abundant and of an excellent quality, and a recent exploration, although of a most superficial character, gave satisfactory evidence as to the existence of various other minerals.

Agriculture.—Agriculture and grazing are on a comparatively large scale, considering the thinly populated condition of the district, but should the railway, which for so many years has been discussed, become an accomplished fact, this rich territory will soon attract sufficient immigration for the development of its unsurpassed natural resources.

Towns.—This district has many towns of more or less importance, the capital being Machiques. The village of Rosario is noted as possessing the most celebrated church in this part of the Republic; its origin is unknown. It may have been the first religious edifice erected by the Spaniards, as both its architecture and details of construction appear to be peculiar to the early part of the sixteenth century.

Rivers.—Perijá is well watered by many rivers, some of which could be made navigable for small sailing craft for a long distance into the interior. Many improvements of this character have been projected, and some even begun, but as from year to year there have been hopes of the establishment of the railway, neither the Government nor the people have cared to embark much capital in an enterprise which in a short time might be of no utility.

Indians.—In this district, near the head-waters of the Rio Negro, are found tribes of Indians, one of which, called the Drapos, frequently visit the villages for purposes of barter. These Indians live by agriculture and the chase, but have no fixed habitations. They are very hospitable, and strangers have nothing to fear when penetrating their country. In this respect they are very different from the Goajiras, a description of whom I have had the honor to forward. (See CONSULAR REPORTS, No. 78.) Notwithstanding, however, the mild character of the Drapos, their women are treated as

mere slaves and beasts of burden. Near the river Tara exists another tribe called the Parivis, who are exceedingly treacherous and ferocious. But little is known of their customs, as no one has cared to risk the danger of approach, but their language and mode of dress are similar to those of the peaceful tribes. Their clothing consists of a piece of native cloth with apertures for the head and arms, and their weapons of blow-guns and bows and arrows, the missiles being dipped in a preparation of animal poison.

Wild Cacao. — Throughout the Indian region of this district wild cacao grows in profusion.

4.—DISTRICT OF COLON.

San Carlos. — In 1776 there was founded upon the banks of the Escalante River, at the southern extremity of Lake Maracaibo, a village called San Carlos, which is now the capital of the present district of Colon.

Spanish Missions. — The Spanish Government founded in the vicinity four missions—Santa Barbara, Victoria, Santa Cruz, and Buena Vista. These missions were considered of exceptional importance, and were governed by ecclesiastics of wide reputation, and thus were established the first settlements in the district Colon.

Soil. — The soil is incredibly fertile, and there is water in abundance, innumerable streams flowing through all parts of this region, which to-day would have reached a very high state of agricultural prosperity were it not for the unhealthy climate which has prevented due increase of population.

Unhealthy climate. — Fevers of all kinds are prevalent, and there is constant malaria arising from the many swamps. No part of Zulia, however, is blessed with a more fertile soil, and for that reason agriculturists are content to face the dangers of the climate.

Waterways. — Besides the many rivers which traverse the territory there are a large number of lakes, or rather lagoons, of extensive dimensions, but with little depth of water. These lakes abound in fish, which form an important article of interior commerce. Petroleum, coal, and asphalt abound.

Temperature. — The temperature is very high and the nights are damp, caused by the vapors which during the afternoon ascend from the lagoons and rivers.

Sugar. — Sugar is the principal production and the cane may be cut year by year for an indefinite period without replanting. It matures quickly and reaches an enormous size, but the percentage of saccharine matter is not great, owing to the constant and excessive humidity of its surroundings.

Communication. — As may be supposed, in a country of this character it is difficult to open roads and keep them in good order. Much labor and money have been expended in endeavors to form good means of communication from the lake to the great coffee regions of the interior, but always with unsatisfactory results. Now, however, a railroad is to be commenced at once from Santa Barbara to the city of Merida, which, when completed, will be of incalculable benefit to both the planters of the interior and the merchants of Maracaibo, who now send and receive by a devious, unsatisfactory, unsafe, and expensive route.

5.—DISTRICT OF SUCRE.

This district, so called in honor of Bolivar's famous lieutenant, is situated east of Colon and is divided into two parts caused by the intrusion of a part of the section Trujillo. This section is similar in almost every respect to the district Colon, except that the roads are even in worse condition. The rivers of this district are its natural highways, but need dredging to render them navigable. Were this accomplished an immense impetus would be given to agriculture and to the cutting and shipment of the many valuable woods which are so abundant in this district.

6.—DISTRICT OF MIRANDA.

Capital.—The district is situated on the east coast of the lake, its capital, Altagracia, being directly opposite Maracaibo. This town is one of the most celebrated in Venezuela, both on account of its antiquity and the many important political events which have there transpired. At one time it far surpassed Maracaibo in importance, but it is now a quiet, sleepy place devoted to the breeding of goats and with no commerce. As, however, it is the terminus of the western telegraph system and the starting point of travelers for the center and east of the Republic, it is a more stirring city than its lack of importance would lead one to expect.

Lake dwellers.—There are various towns of more or less importance in the district Miranda, one of which, Lagunillas, recalls to mind the ancient Swiss lake dwellers, as it is built upon piles in the lake at a considerable distance from the shore. Large salinas, or salt ponds, are numerous and the Government receives a large revenue from this monopoly.

Cattle grazing.—Cattle grazing is carried on extensively in the southern section at the foot of the mountain range which separates this state from Barquisimeto.

Asphalt deposits.—Large asphalt deposits exist, and near a town on the lake coast called San Timoteo are the remains of an Indian village which was already in ruins when the Spaniards conquered the province. There are many interesting legends and traditions respecting these relics of a most ancient race, and much treasure is supposed to be concealed among the ruins. Nothing, however, has as yet come to light save fragments of pottery and weapons.

The climate of this district is as a rule very good, and convalescents from Maracaibo frequently are sent to complete their cure at Altagracia.

7.—DISTRICT OF SAN RAFAEL.

This district is situated in the extreme north of Zulia, the town of Sinamaica being the capital. North of San Rafael is the famous peninsula Goajira, nominally a federal territory, although the Indians are the virtual and independent lords of the soil.

The river Limon extends through the northern portion of the district, and although on its banks there is a wealth of mahogany and other valuable timber and near its head-waters gold and other minerals, no organized effort has ever been made to develop its resources.

AN OPENING FOR CAPITAL.

Here, as in other parts of the section Zulia, a rich harvest awaits the enterprising pioneers who may devote capital and energy to the task, and I believe that should the Republic continue tranquil I may soon be able to report that steps have been taken to develop the amazing natural resources which undoubtedly exist. I sincerely hope, however, that our own countrymen may have their share in the work.

New enterprises are being constantly undertaken in Venezuela, and many foreigners, individuals and companies, have wrested fortunes from its virgin territory, but I fail to call to mind any instance of organized American enterprise. This country is now in profound peace, and I see no reason why it should be broken. There are so many different fields for well-directed energy, aided by sufficient capital, that profitable modes of investment are not lacking, and the percentage of gain is, as a rule, far greater than in more settled and advanced countries.

NATURAL PRODUCTIONS OF THE SECTION ZULIA.

I beg to indicate the more important natural productions of this section, which will be of interest as showing the great variety and abundance with which this region is blessed.

FLORA.

More than one-half of the territory of Zulia is forest, and the vegetable kingdom is here most prodigally represented.

Palms.—Of the palms, which Humboldt christened "princes of the vegetable kingdom," there are an infinite variety, and their description would fill many pages. No other tree is of such use to man, as it gives food, drink, clothing, and shelter.

The cocoa-nut.—The cocoa-nut is the most widely known of this family, but there are many others which are scarcely known to the outside world. Six hundred different varieties have been classified, and perhaps as many more are yet awaiting the botanist.

The algarroba.—The algarroba (*Hymenæa curbaril*) abounds in this district. It produces a gelatinous bean, which is excellent food for animals, and its wood is used for building.

The dividivi.—The dividivi (*Coulteria tinctorea*), so widely used in Europe for tanning leather, is also a hard, compactly-grained wood far superior to our oak.

The copaiba.—The copaiba tree (*Copayfera officinalis*) is so universally distributed throughout the forests that it alone should produce a revenue sufficient to sustain the population.

Various woods.—I will mention the more important woods and plants, but with only occasional comments, as within the limits of an official dispatch it would be impossible to do justice to this most interesting subject: The ceibo (*Bombax seiba*), the Maria (*Petrea arbarea*), the Jabo (*Spondea*

lutea), the castor tree (*Palma cristi*), the totumo (*Crescencia cugete*), the granadillo (*Bucida capitata*), lignum vitæ, the paraguatan (*Macrocuemium tectorium*), cedar (*Cedrela odorata*), mahogany, rosewood, guayacan, zapatero (box-wood), the pardillo, are but a few of the many woods excellent for building purposes, except the castor tree, which is only useful for the oil extracted from its bean. This tree grows wild in the greatest abundance, and were it systematically cultivated it could be made a source of great profit.

The totumo.—The totumo produces a fruit similar in appearance to a watermelon, but with an uneatable pulp. Its shell is used for plates, spoons, cups, saucers, etc., and in many sections of the interior the table furniture is exclusively composed of the fruit of the totumo.

The bejuco.—The bejuco, or creeping parasite, is an interesting feature of the forests, and one species is useful on account of a curious quality. It is a vine of about 2 inches in diameter, and in the driest season is full of water. Many travelers have saved themselves from death by thirst through their knowledge of this parasite, which, when cut, gives an abundant supply of fresh water. One of the cactus tribe has the same peculiarity, and in the sterile plains of Coro the goats, which are there bred in great numbers, are able to thrive even in the times of excessive drought.

The cactus.—Of the cactus there are many species, the giant cactus frequently attaining a height of 30 feet. The maguey plant is abundant, and of one variety, called coçuy, a liquor is distilled of highly intoxicating properties, but agreeable to the palate and a valuable remedy for kidney affections.

AGRICULTURAL PRODUCTS.

Coffee, cocoa, tobacco, cotton, indigo, rice, Indian corn, beans, and peas may be considered as staple products of this section, and there is no class of tropical fruit which is not represented. Corn will easily give three crops per year, and four have been produced.

As I have already mentioned, one planting of sugar-cane suffices for many years, and the only attention a plantation requires is to keep down the weeds for the first three or four months after cutting and give an abundant supply of water.

Fibrous plants.—Of fibrous plants there are many species. The pita, which has recently attracted so much attention in Mexico, grows here in profusion, and is extensively used for the manufacture of ropes, nets, hammocks, etc.

The edible yuca.—There is one plant to which I would call especial attention, as I believe it could be readily grown in our Southern States. This is the yuca, the botanical name of which I do not at present recall. It has an exceedingly starchy root, more nutritious than the potato and much larger. It can be boiled or roasted, and is also used in the preparation of cassave.

The poisonous yuca.—There are two classes of yuca, which, to the inexperienced eye, are precisely alike. One, however, is an active poison, and many lives were lost among the Spaniards on account of their ignorance of

this fact. The poisonous species (*Yuca amarga*) can, however, be used for food after a certain preparation by which the noxious properties are extracted, leaving a white, mealy flour, which is baked in thin cakes 2 or 3 feet in diameter. This is the cassave, or native bread, which can be kept for months in good condition, and, although dry, is not unpalatable, and is a nutritious food. In the process of making cassave the starch is extracted, and little, if any, foreign starch is used in Venezuela.

The deadly manzanillo. — Along the coast there is found the manzanillo (literally, "little apple"). It is a tree somewhat smaller than our apple-trees and similar in appearance, producing a miniature apple of about an inch in diameter, very pleasant to the eye and of an insipid sweetness to the taste. It is usually found where there is no fresh water, and may easily tempt a thirsty, inexperienced voyager. It is, however, a deadly poison, primarily causing intense burning pains in the throat and stomach, and, unless remedies are promptly applied, death is inevitable. It is even dangerous to remain in the shade of one of these trees, and a person taking shelter under it during a rain will suffer from painful blisters wherever a drop of water falling from the leaves touches his person. Crabs are very fond of the fruit of the manzanillo, which they eat with impunity. Their flesh, however, becomes thoroughly impregnated with the poison, rendering it a fatal diet.

MINERAL PRODUCTIONS OF ZULIA.

The mineral kingdom is well represented in this section, but, unfortunately, it is as yet entirely undeveloped. Gold, copper, lead, and antimony are known to exist, and I believe the former will ultimately be found in quantities sufficient to warrant large outlays for its extraction. Asphalt, coal, and petroleum are found in great profusion; amber has been discovered in small quantities; marble and rock crystal are encountered in various localities, and iron in form of an oxide is not rare.

The soil near Maracaibo is so impregnated with nitrate of soda that I believe beds of this fertilizer must exist in the neighborhood, although they are yet to be discovered.

I venture also to predict that near the coast deposits of phosphate of lime will some day come to light. The probabilities in this respect are in favor of the Goajira peninsula, and it is possible that the opposite coast of Paraguaná, which forms the eastern boundary of the gulf, may also contain this much-sought-for mineral.

THE FAUNA OF ZULIA.

A student of natural history would find much to interest him in the animal kingdom of this section.

The quadrumane. — Of the quadrumanes the chief are the araguato (*Simia ursina*), a large monkey of between 3 and 4 feet in height, the marimonda (*Simia belzebuth*), the *mono nocturno*, which sleeps during the entire day, not even resisting capture, but spends the night in seeking food, and the common monkey of Buffon.

The araguatos are always found in troops under the command of a chief. They are very vociferous, and the forests at sundown and sunrise are filled with their noise. There appears to be a certain system in their chants which commence always by a solo performance and afterwards all join in chorus, thus alternating for hours. The common monkey does much damage to corn and other crops, and it is very difficult for the farmer to avenge himself, as the depredators always have pickets on the watch who give the alarm in time to insure the escape of the entire band. All of these animals are easily domesticated, and show much attachment to their masters.

The jaguar. — The jaguar, called here the tiger, is the chief of the carnivoræ. It is hardly so large as its Indian or African congener, but is of amazing strength, and will easily drag off the largest ox. It rarely attacks man, except when instigated by extreme hunger, and is not much feared by those familiar with its habits.

The felines. — The panther, ounce, puma, wild cat, and an animal similar to the latter called the guanaipe, are the principal members of the cat tribe. All are very ferocious and bloodthirsty, and the puma, especially, will continue to kill from mere wantonness after his appetite is satisfied.

Vampire bats. — Among the carnivoræ may also be classed the vampire bat, which in some districts is very abundant. It is very fond of human blood, and attacks sleepers by making a small incision in the great toe. Much blood can be lost in one night although the puncture is microscopic. I am aware that many persons are skeptical respecting this fact, but personal experience has convinced me of its truth.

The rodents. — Of the rodents there abound squirrels, rabbits, hares, hedge-hogs, and three animals peculiar to Venezuela of which I only know the native names, and I do not believe they have ever been scientifically classified. These are the acurito, aguti, and the lapa, all of which are excellent for food. The first-named is exceedingly prolific, it being estimated that a single pair will produce at least five hundred descendants in the course of a year.

The sloth. — The sloth is common in the forests, and the armadillo, called by the natives *cachicamo*, abounds in all sections.

Peccaries. — The wild hog known in the United States as peccaries, and which are found in Texas and Mexico, are here met with in large bands, and their chase is dangerous. They are utterly without fear, and many a hunter has been obliged to seek shelter in a tree and there pass hours, as until nightfall the peccaries will not withdraw. This animal when young can be easily domesticated, and will then follow his master like a dog. In some interior districts a woman who is obliged to travel alone and on foot is very often accompanied by a peccary for protection, and thus feels secure from assault or ill-treatment.

The manatee. — There are various cetaceans on the coast and in the rivers, one of which, the manatee, is amphibious and suckles its young. It frequently grows to an enormous size, and specimens have been captured of a weight of more than 2,000 pounds.

Birds.—Of birds there is an infinite variety, and many with magnificent plumage. Of song birds, properly speaking, there are none. Several species can be taught to whistle different airs, but the melody of our woods at home is entirely lacking here.

FISH.

There is an abundance of fish in this section, on the sea-coast, in the lake, and in the rivers.

Torpedo eels.—The *gymnotus*, or torpedo eel, is much feared by travelers who may have occasion to cross the rivers or lagoons of the lowlands. Its shock is not fatal but may paralyze a swimmer to such an extent as to render him helpless.

The caribe.—The *caribe* is a most voracious little fish seldom exceeding 6 inches in length, but armed with a double row of needle-like teeth. It is found in many of the interior rivers, and is more dreaded than the alligator. A single scratch on the body of a swimmer exuding a drop of blood will instantly attract thousands of these fish, and their attack is so fierce that only a few minutes are necessary to disable the strongest man.

The carbina.—I have in previous reports often referred to the *carbina*, the sounds of which constitute such an important article of export from this section. This fish is wonderfully abundant and very prolific. In appearance it resembles the weak-fish of the New Jersey coast, but is much larger and its flesh inferior.

Alligators.—Lake Maracaibo and its tributary rivers swarm with alligators, some of which reach a length of 25 feet. Alligator eggs are eagerly sought for, and are considered delicacies, especially in the form of omelettes.

Tarantulas and centipedes.—As in all tropical countries, venomous reptiles abound. Scorpions and centipedes are found in all sections, the latter attaining a length of 15 inches. There are various classes of spiders, one of which, the tarantula, is truly hideous. Its body is about 3 inches in diameter, with a spread of claws of nearly 1 foot. This animal has the faculty of flattening itself upon the ground until it can scarcely be distinguished, and it thus awaits its prey. When disturbed or attacked it suddenly springs to an upright position, standing 5 or 6 inches in height. It is then able to leap a distance of from 4 to 6 feet and captures small birds with the agility of a cat. Its repugnant appearance is heightened by a growth of hair on its body and legs, whence the native name of "hairy spider." It is a common amusement in some sections of the interior to place in a box half filled with sand a tarantula and a centipede. A fierce combat ensues, in which, as a rule, the tarantula is victorious.

Serpents.—There are many serpents, both venomous and harmless, but the former predominate. The boa-constrictor, called here *araga-venado*, or deer swallower, is very common and grows to an enormous size. The anaconda is of the same species as the boa, but is a water snake. The flesh of the anaconda is very white and tender, and in many parts of the country is much esteemed for food. Foreigners who have eaten it inform me that it is

very palatable. Neither the boa nor the anaconda is venomous, but their constrictive power renders them terrible adversaries. The rattlesnake abounds in the savannas, and has been known to reach a length of 8 feet. The *macaurel, viejita*, tiger snake, and the *mapanare* are the chief poisonous snakes, and the last named is met with in great numbers upon the trees on the river banks.

Canoes in passing through narrow passages where the branches overlap overhead, are sometimes surrounded by these serpents, which, although very venomous, rarely attack if not molested.

The *sobadora* is a very peculiar snake which is not poisonous, but when enraged will give chase, and upon reaching the object of its anger, whether man or beast, places its head upon the ground, and, with its long whip-like body, inflicts a severe flagellation.

There are many varieties of serpents which, although well known to the natives of the country, have never been classified by naturalists, and the fauna and flora of this section are yet awaiting their investigation.

E. H. PLUMACHER,
Consul.

UNITED STATES CONSULATE.
Maracaibo, February 20, 1889.

TRADE AND PRODUCTS OF NEW CALEDONIA.

REPORT BY VICE-COMMERCIAL AGENT MORGAN, OF NOUMÉA.

Since my last report the serious drought which prevailed during nearly the whole of 1888 has made its depressing effects felt throughout nearly every industry.

MINES AND MINING.

During the year some little stir has taken place in mining, notably in nickel and chromate of iron.

Nickel.—The Nickel Company has made several large shipments of ore direct from the Thio mines to Europe, in sailing ships, and the same company has purchased several other nickel properties, and is now engaged erecting a smelting plant in the vicinity of the mines. Messrs. Vivian & Sons, of England, have an engineer and assayist inspecting various properties here, it is supposed with a view of working nickel, but up to the present they have not commenced actual operations. Messrs. Ballande Fils, of Bordeaux, are resuming shipments of nickel from their valuable group of mines situated on the east coast, a little north of Thio; and, altogether, it appears that a great demand has sprung up in Europe for New Caledonian nickel ore, which can be supplied in almost any quantities.

Chromate.—A demand for this mineral has sprung up in Europe, it now being preferred to Smyrna ore in consequence of its possessing properties that admit of its use in the construction of smelting furnaces. The difficulty in

shipping this mineral is in dressing it up to the standard of 50 per cent., under which it is difficult to dispose of it. Chrome is found in well-defined lodes, but has never been proved to any great depth. It is also met with in alluvial deposits, mostly in the mountain crevices, and it is washed out in the form of black powder. Recently two companies have been formed in Sydney for the development of chrome, and both have commenced operations, the one having already commenced the erection of crushing machinery. Up to the present neither company has made shipments of importance, and it is supposed that an amalgamation will take place before the exploitation is thoroughly opened up. No prospectus has been issued, and the amount of capital is unknown. It is very certain that immense deposits of chrome exist here, and should it be found that the ore can be dressed with facility up to the required standard, there will be no difficulty in finding a market.

Cobalt.—Cobalt ore is yet collected, but as this only exists in enforced deposits the supply is gradually falling off.

Coal.—One or two attempts have been made to float companies in Sydney to work the coal here, and experts have been sent to inspect the properties, but have not been favorably impressed, and I think it very doubtful whether a good class of coal will ever be found here in sufficient quantity to justify a large expenditure. It is a remarkable fact that the French Government appears so apathetic about the development of this industry, when it is of such vast importance to their naval stations in the Southern Ocean, and capitalists in Sydney have remarked that it would not be likely that that Government would allow such an industry to fall into foreign hands. As far as I can find here the coal dips very suddenly and stands in a conglomerate mass, without any sectional divisions. It requires a strong draught to burn it and leaves a white ash. At present two mines are being worked, and in one two large deposits have been cut, but the proprietor is pushing down his shaft with a view to cutting in depth, and nothing much will be known for some little time.

Copper.—The Pilon mines are busy erecting smelting machinery, and it is expected before long that large shipments of this metal will go forward. An enormous amount of capital has been spent in opening up this property, and the enterprise is deserving of good results. It is known that several lodes exist in the Pilon district, and, no doubt, the opening of the furnaces will be an incentive to the working of many mines.

MAIL SERVICE.

Mail service has not given satisfaction to the public. We frequently had three steamers here at the same moment. It is understood that the Messegeries Maritime are running with a view to get out of the part of the contract which necessitates them running a large boat, and wish to carry on the service with a small local boat. Their annex arrives here on the 9th and the regular liner on the 12th of every month, and these are or were for 1888 the only direct occasions for communications with Sydney. The Australian United Steam Navigation Company, a branch of the British India, runs two

boats monthly right through to Fiji, declining to return here in consequence of the heavy port and pilot charges. To obviate these difficulties a private offer was made to run a boat from Sydney to Nouméa, making the tour of the coast, and thence back to Sydney, a monthly voyage, but this proposition was unanimously rejected by the council-general, it being considered that such a service would interfere with the heavily subsidized coast mail, and tend to shift much of the trade passing through Nouméa direct to the coast. It is the opinion that the above proposition must eventually be further considered, as it would undoubtedly be of great benefit to the country at large, inasmuch as it would bring the mines and country merchants and settlers into direct communication with Sydney, from which port large purchases of merchandise are made, and to which port is sent most of the products, all of which have to pass through Nouméa, under the present system, at a great cost, probably not underestimated at $80,000.

For the coming year the Government has agreed to pay the Australian United Steam Navigation Company a yearly subsidy of $5,000, conditionally that they run one boat monthly back from Fiji, and the first return boat of this service is expected in Nouméa about the 1st of February.

I may here remark that one of the boats of the Australian United Steam Navigation Company touches monthly at the New Hebrides.

CATTLE INDUSTRIES.

The meat-preserving company had taken up the Government meat contract at 34 centimes per kilogram (3 cents per pound), for which their provisional deposit was $5,000. Before commencing the contract the meat company, which had previously purchased about two-thirds of all the cattle in the country, entered into an amalgamation with nearly the whole of the balance of the cattle holders on the following conditions: That the company was to abandon the contract at 34 cents, thereby forfeiting their deposit, in consideration of which the cattle holders were to deliver cattle at 55 centimes per kilogram, the company agreeing to take all they could deliver, and thus being placed in a position to force the hands of the Government and demand their own price. Accordingly the old contract was abandoned and a retender sent in demanding 116 centimes per kilogram (10 cents per pound), but the home Government having instructed the local authorities not to exceed 74 centimes per kilogram (7½ cents per pound), the tender was thrown out, and the administration at once made preparations to kill their own meat. This movement, assisted by a private offer, induced the syndicate to come to terms, and the contract has been concluded for one year at the price of 74 centimes per kilogram. These movements have necessarily augmented the price of beef.

During the year we have suffered terribly from drought, and the cattle have been dying in hundreds throughout the country. It is the opinion of the best authorities that there will not be sufficient cattle in the country to continue the meat-preserving business and supply the public wants.

I take this opportunity of calling attention to the attached extract from the Sydney Morning Herald, the same referring to the meat-preserving company. You will notice that the undertaking proposed to be carried out with a capital of 800,000 francs ($160,000) and the insinuations as to the resources of the country are very misleading. In the best of seasons it was never estimated that New Caledonia contained more than one hundred and seventy-five thousand head of cattle, and numbers of these are very wild and degenerate. The meat-preserving works and public butcheries, combined with the dreadful drought which has lately devastated the country, have so diminished the stock that it is quite possible importation will have to be resorted to should the meat preserving be continued.

[From the Sydney Herald.]

The new Société Agricole Industrielle, et Commerciale de la Nouvelle Calédonie, spoken of in my last, is definitely constituted with a capital of £32,000, and contracts with the State for 1,000,000 kilograms of fresh meat per annum during four years, and 4,000,000 of preserved beef for the army. It is declared that France will thus need no meat from any foreign country, and will be equally independent in regard to wool, as the imported Merino sheep multiply. The mines are declared to be of immense importance, the nickel alone being of almost incalculable value. The expectation of becoming independent of supplies of all kinds from Australia is declared to be the leading aim of this new development.

Although some good sheep have been raised here, this can not be called a sheep country, as there are only a few districts on the mainland where they have been a success, and the capacities of the islands on which they mostly succeed are very limited. The impression that New Caledonia can ever carry sufficient stock to supply the French army, keep up local supplies, and also find the surplus wool for France is very erroneous. The present stock of sheep in the country would not exceed 15,000, and importation from Sydney is very regular. The tax on imported sheep is $1 per head.

LOCAL EXHIBITION.

A display of the articles intended for the Paris Exhibition was a great success, and the industries and resources of the country were well represented, consisting of coffee, maize, wheat, barley, oats, rice, tobacco, timber, minerals, leather, silk cocoons, etc. The display of minerals was very imposing, whilst the collection of native arms from the New Hebrides, the Loyalties, and New Caledonia attracted great attention. The work showing the progress made by the scholars from the free Government schools was of great interest, it being generally of very neat execution and, in some instances, beautifully turned out, and it was a good introduction to the French system of education.

CROP PRODUCTS.

Maize.—Cultivation has suffered very much in consequence of the continued drought, and maize, of which a considerable quantity is generally raised, has risen to a high figure, viz, $5 per bag of 100 kilograms, and one parcel has already arrived from Sydney. Hay is also being imported in large quantities. Vegetables are scarcely attainable.

Coffee.—It is anticipated that the coffee crop will suffer much. This is an industry rapidly assuming an important position and the contractors for 1889 will supply the whole Government demand from their own plantations, leaving large quantities for exportation.

Rice and Sugar.—Rice and sugar are not produced as largely as they might be nor in proportion to the demand. Wheat, barley and oats have only been experimented with, but sufficiently to prove the possibility of growing these articles.

Tobacco.—Tobacco is being produced in large quantities, and a demand for the locally grown article is rapidly increasing. Tobacco is usually cut up and sold in small packets of 50 or 100 grammes to the soldiers, sailors, and convicts. The Government contracts annually for from 8 to 10 tons, the present contract price being 2.49 francs per kilogram. There is now a tax on the locally grown article equal to 2.50 francs per kilogram (22 cents per pound), on which ultimately is allowed a drawback of 2.10 francs per kilogram, thus leaving a tax of 8 cents per kilogram against it. No attempt has yet been made to produce good cigars or twist, the latter article being in great demand for the native and island trade. The brands preferred are Elephant and Beaconsfield, running about 26 sticks to the pound, and all imported from Sydney at a cost of 25 cents per pound. The duty here is 2.50 francs per kilogram, and selling price, in bond, an average of 3.20 francs per kilogram.

MANUFACTURES.

Leather.—The leather production is about 25 tons per annum, and there are three producers of this article. The Government consumes about 24 tons yearly and divides the demand equally. Sole-leather brings about 2.90 francs per kilogram, and the better qualities as high as 4.50 francs per kilogram.

Cocoa-nut oil.—Cocoa-nut oil is still produced in small quantities, and mostly to order. Merchants generally prefer shipping the raw material.

Soap.—Soap manufacturing can not be pronounced a success, as it can not compete with the common household soap from Sydney. This industry is in no way protected.

Ice.—Ice has been produced here for some time, but the supply is not regular.

Copra.—The copra trade has been very brisk in spite of the low prices ruling, caused by the high rate of freight between Australia and Europe. A direct shipment to France of 350 tons has been sent forward in a French bottom. A French and an English ship are now loading for Europe, and, after ballasting with minerals, will fill up with copra. This copra is not all produced in New Caledonia, quite the half of it coming from the New Hebrides.

SHIPPING.

The following is a statement of the tonnage visiting the port of Nouméa and the imports and exports for the year 1888:

Description.	Vessels.	Registered tons.
French	35	48,818
English	52	30,252
American	4	208
Italian	1	848
Total	92	80,126

IMPORTS AND EXPORTS.

Imports for 1888.

Articles.	Value.
	Francs.
Australasian coal	290,566
New Zealand timber	36,050
American timber	64,850
Australian timber	20,368
General merchandise	8,799,410
Total	9,211,244

Exports from Nouméa in 1888.

Articles.	Quantities.	Value.
		Francs.
Minerals		2,981,783
Copra		250,000
Coffee	tons	25	50,000
Maize	do	990	148,000
Ferugas	do	5½	5,500
Beche de Mer	do	51	76,500
Hides			15,335
Old copper			1,500
Old zinc			2,400
Calves			5,000
Sheep			250
Leather			13,500
Cocoa-nut oil			23,000
Grease (tallow)			27,000
Bones			3,750
Horns			1,500
Wool	bales	115	16,000
Preserved meat			596,000
Kauri gum	tons	1	300
Tortoise shell			1,200
Bananas	bunches	11	66
Fruits and oranges	cwts	1,192	11,920
Cocoa-nuts	bags	77	230
Hair	do	6	100
Rags	do	54	860
Total			4,232,294

Much of the cobrale appearing here comes from the New Hebrides. The values of sundry articles are approximative.

THE NEW HEBRIDES.

New Hebrides trade continues to advance, but is mostly in favor of Australia. The trade between these islands is now carried on principally by the Société Calédonien des Nouvelles-Hebrides, which is subsidized to the extent of $50,000 per annum. This company runs regularly the steam-ship *Caledonien* and the schooner *Dauphin*. The French schooner *Lulu* and the American schooner *Mary Anderson* are also regular traders. I may mention that the subsidy granted to the French company is not for any fixed time.

The settlers are now commencing to cultivate tobacco, maize, and coffee. Tobacco is found to be of a superior quality. Coffee, tea, and spices will grow well, and these islands have a good future before them in the production of all tropical fruits, there being an unlimited demand therefor in Australia. Their facilities of shipments are now very great, as at present there are two boats subsidized, one from Sydney and one from Melbourne, besides which the Australian United Steam Navigation Company causes one of its boats from Nouméa to call monthly. At present a schooner called the *Edith May* is discharging coal here en route for Aniteum, the most southern island of the group, to load logs, mostly Kauri pine. There is a saw-mill erected at this island, and some of the sawn timber received in Nouméa has been pronounced of first-class quality by the carpenters — the boat planking superior to New Zealand.

British shipping, so I am informed by the English consul, has greatly fallen off during the year, but I think this can be accounted for as follows: The English boats have not returned from Fiji, and there are now no English vessels between Nouméa and the New Hebrides. Duty, ad valorem, on all imported goods, has been increased from 2 per cent. to 4 per cent.

The Government is now nearly prepared to open up a large extent of new stone wharfage, and are also employed surveying a site for a dry-dock, the want of which is sorely felt. For the repair of all small sailing ships they have had to be hove down and the men-of-war have to go to Sydney.

The Bank of Indo-Chine has established a branch. It introduced a capital of $160,000 and declared a note circulation of $180,000. This is the fulfillment of a want long felt.

Labor traffic as at present carried on between Nouméa and the New Hebrides is certainly not an indication of the success of the employment of convicts or liberated convicts, and managed, as it is, without Government supervision, can not but be most unfair to the natives, who can never possibly understand the contracts into which they are betrayed. It must be remembered that the Government disestablished the old labor traffic with a view to bringing about the better employment of the liberated convicts. The service as at present carried on as nearly as possible approaches to slavery, if it is not so out and out. A great many of the natives introduced were sent direct to

the mines; the only stipulation they have the sense to make on engaging for Nouméa is that they shall not be sent to the mines, but once here they are no longer free to insist and without protection have to submit. There are absolutely no arrangements made to return these natives home and no control as to their length of service or payment of wages. During the year there were introduced from the New Hebrides into New Caledonia, by the American schooner *Mary Anderson*, 169 persons; by the *Dauphin* (French), 52; *Lulu* (French), about 200; a total of 421 laborers.

WILLIAM E. MORGAN,
Vice-Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Nouméa, New Caledonia, January 3, 1889.

THE BISMARCK ARCHIPELAGO.

REPORT BY CONSUL GRIFFIN, OF SYDNEY.

It is, perhaps, not generally known that the commercial interests of the United States in the islands of New Britain, New Ireland, and others of the group now known as the Bismarck Archipelago are much larger than those of Germany or any other country. Several American citizens have, within the last few years, obtained large tracts of land by purchase from the native chiefs, and so perfected their plans for permanent settlement that it will be a very difficult task to dislodge them. They have also established a number of trading stations in various parts of the archipelago and in several of the islands adjacent thereto. All their lands have been wholly or partially surveyed, and a number of substantial buildings and other improvements erected upon them. The deeds of these lands have been made out in the usual form, with the signatures of the parties making the conveyances, duly attested by responsible witnesses. The purchasers have also had their deeds recorded in the consulate at Sydney, as the islands of that part of the South Pacific were embraced within the jurisdiction of this consulate.

THE ARCHIPELAGO.

The islands composing the Bismarck Archipelago consist of two large and a number of small islands, beginning at the equator and extending to the eighth degree of south latitude, between the meridians 148° and 154° east longitude. The island of New Britain, which is the largest in the group, is about 300 miles in length, and varies from 5 to 40 miles in width. The whole group presents the appearance of a large horseshoe. New Hanover lies at the end of the northern arm, and Dampiers Strait and Rock Island at the southern arm, the latter being only about 20 miles from the coast of New Guinea. The group was discovered by Dampier in 1699. The interior of the main island is mountainous, but there are large tracts of country on both

sides of the range extending toward the shore containing some of the richest soil in the world, and capable of growing every kind of tropical produce. There are extensive plains of grass country situated on high table-lands in the vicinity of Blanche Bay, Cape Gazelle, and Raaluan. The climate in those districts is described as healthful and invigorating. Blanche Bay is easy of access and contains good anchorage. It was discovered in 1872 by Her British Majesty's ship *Blanche*, from which it derives its name. According to Findlay's Pacific Ocean Directory the entrance to the bay, between Port Praed and Schulze Point, is about 3 miles in width, and suitable for the largest ships. It extends 6 or 7 miles inland, and is surrounded by magnificent scenery. Further on are two good harbors, the smallest, named Greet or Griat, being formed by an indentation in the north shore, with a small island called Matupi on the west side. At Matupi there is a German settlement, where coal and provisions for vessels can be obtained.

Cape Gazelle, on the northeast extremity of New Britain, terminates abruptly. The shores thereabouts are covered with extensive forests, having many cleared spots or plantations. From Cape Gazelle the shore recedes southward, projecting again at a distance of 17 miles. Cape Buller lies about 18 miles further on in a southwesterly direction. The coast consists of a low mountain range rising abruptly from the beach. Some lofty peaks in the interior are distinctly visible.

The island of New Ireland is 200 miles long with an average width of about 12 miles. It is situated between the parallels 2° 40′ and 4° 52′ south latitude, and between the meridians 150° and 152° east longitude. The mountains of New Ireland rise to a height of several thousand feet. The country is very rich, especially in the interior, and is well supplied with timber and water. Some of the best timber trees attain a great height and measure from 10 to 12 feet in circumference.

The islands to the eastward of longitude 154° are low coral lagoon islands, covered with cocoa-nuts, and are said to be densely inhabited.

The island of Bougainville, outside of the archipelago, contains a lofty range of mountains, one peak of which, Mount Balla, is 10,170 feet in height.

Booker Island is separated by a small channel only navigable by small vessels. It is surrounded by a number of little islands. In the lagoon there is good anchorage in 8 to 10 fathoms of water.

NATIVE POPULATION.

The inhabitants of the group are principally of Papuan origin, and their average height is about 5 feet 6 inches, although men are frequently met with over 6 feet in height in the more densely populated villages in the interior. Their complexion is of a dark brown, almost black. Some of the tribes, however, are of lighter complexion, which would indicate a mixture of other blood, probably that of the Malays. Both the men and women go entirely naked with the exception of a small strip of bark or leaves around the loins. They have thick, black, curly hair, large, flat noses, and symmetrical bodies.

They display a great fondness for feathers of gaudy colors, with which they decorate their heads. Sometimes they wear a helmet or head-dress about 18 inches in height, made of bark and sea-weeds, and ornamented with shells, cats' eyes, etc. Their houses are small and miserably made, and wholly destitute of mats and furniture.

The inhabitants, it is said by Wallace, have a peculiar custom of confining their girls in cages until they are old enough to be married. This custom is said to be peculiar to the people of New Britain. The cages are made of twigs of the palm tree, and the girls are put into them when only two or three years of age. The Rev. George Brown established a Wesleyan mission in New Britain in 1876, and I learn from him that these cages are built inside of the houses, and that the girls are never allowed to leave the house under any circumstances, and are only taken out of their cages once a day to be washed. The houses are closely fenced in with a sort of wicker-work made of reeds. Ventilation under the circumstances is rendered very difficult. The girls are said to grow up strong and healthful in spite of these disadvantages.

Mr. Brown does not think that the chiefs exercise much authority over their followers. They display a great fondness for jewelry made of shell and bone. Their weapons consist of spears, slings, bows and arrows, shields, etc. They chew betel, and are impulsive and demonstrative and given to bursts of boisterous laughter. They are divided into two distinct classes called the *Maramara* and *Pikalaba*, and marriage between these classes is forbidden, and if ever practiced is regarded with the utmost contempt. They are filthy in their habits, cruel and treacherous, and practice the lowest vices of savage races, including infanticide and cannibalism. Their language is soft and musical, and, like that of other South Sea islanders, is of Malayan origin.

The natural history of the islands is similar to that of New Guinea. Kangaroos and other marsupials are plentiful. They have a cassowary, a large bird allied to the ostrich, but characterized by a greater shortness of wing, a bony crest, and pendant wattles on the neck. The cassowary is said to be the largest bird known, with the single exception of the ostrich, and its height when erect is about five feet. The female lays three large greenish-colored eggs, which it leaves on the ground to be hatched in the sun.

A number of other rare birds have been found in New Britain, some of which are of gorgeous plumage. The bird-of-paradise, so frequently met with in New Guinea, has not as yet been observed in New Britain. The butterflies in the vicinity of Raalan are of immense size, and their wings are said to be richer and more brilliantly colored than any other hitherto found.

AMERICAN COMMERCE.

American commerce in the Bismarck Archipelago, and in the islands adjacent thereto, was first started in the early part of 1879 by Emma E. Forsythe, a daughter of Mr. Jonas M. Coe, formerly consul at the Samoan

islands. Mrs. Forsythe has Samoan blood in her veins, her mother being the daughter of a Samoan chief.

Mrs. Forsythe is now thirty-six years of age. She received her education at Sydney and San Francisco. Besides being highly accomplished she is a lady of very prepossessing appearance and of remarkable energy and intelligence. At the time of her marriage she was acknowledged to be the most graceful and beautiful woman in the island. She made such an impression upon Lord Pembroke that he sketched her portrait at length in the character of *Coe* in his work entitled "South Sea Bubbles."

Although married to an Englishman, Mrs. Forsythe never renounced her nationality. After the death of her husband, which occurred in the year 1872, she took up her residence with her uncle, Mr. E. H. Coe, in San Francisco, Cal., and at a later period joined her father's family at Apia, Samoan Islands. She rendered valuable assistance to her father in keeping the books of the consulate. She is quoted as an authority on native languages and dialects, and during my term of office as consul at Samoa, she, on various occasions, acted as my amanuensis and interpreter, and translated nearly all my correspondence with the Samoan Government. She has always taken great interest in the trade and commerce of the South Sea islands, and is, perhaps, better posted on the subject than any other citizen of the United States residing south of the equator. In 1879 she removed to the island of New Britain, and, having purchased from the natives several large tracts of land there, she formed a partnership with Mr. Thomas Farrell, and in the same year she established one of the most extensive business enterprises in the South Sea islands under the name of Thomas Farrell & Co., planters and trading merchants. The head-quarters of the firm were established at Raaluan, near one of their largest plantations, which now includes 14,500 acres of the choicest land in New Britain. Mr. Richard Parkinson, a naturalist of some distinction, formerly connected with the museum of John Cæsar Godeffry & Co., at Hamburg, has charge of the plantation. For several years past this gentleman has applied all his energies to the work intrusted to him with the devotion of an enthusiast. The buildings are of wood and iron, and were erected at a heavy cost, being by far the most extensive and valuable in the islands. The greater part of the landed estate is owned by Mrs. Forsythe, but considerable tracts of country have been purchased in the name of the firm; but much of the latter is said to be covered by mortgage to her. Her property and that of the firm within the Imperial German protectorate is estimated at 120,000 acres, and that outside of the protectorate at 30,000 acres, making a total of 150,000 acres.

It will be seen by the following table that their estate amounts to considerably more than the whole of the property belonging to all the other foreigners in the island put together.

Table showing the number of acres of land owned by foreigners within the Bismarck Archipelago.

Nationality.	Name.	Acres.
American	Forsythe & Farrell	120,000
German	Hernsheim & Co	16,000
Do	Deutches, Handel & Co	6,000
French	Morton and Duprie (Catholic missionaries)	5,000
English	Wesleyan missionaries	3,500
Total		150,500

The Americans were the first to have had their land surveyed. In September, 1884, Mrs. Forsythe purchased the schooner *Eudora* at San Francisco, and that vessel has ever since been employed collecting produce at the various trading stations in the islands. Mrs. Forsythe was so successful with the *Eudora* that she purchased at Sydney in the early part of 1885 the little steamer *Golden Gate,* the bill of sale of which was recorded in this consulate. This vessel is under the command of Capt. Agostino Stalio, who has had much experience in the island trade. The *Golden Gate* is the only steamer carrying the American flag now engaged in trading among the islands in that part of the Pacific.

The business of Mrs. Forsythe has extended so rapidly that she intends shortly to dispatch an agent to San Francisco for the purpose of constructing several vessels there.

During the year 1885 the firm exported 962 tons of copra against 350 tons for Deutches, Handel & Co. In addition to the copra, Mrs. Forsythe exported 37 tons of pearl shell, 35 tons of beche-de-mer, and 27,000 pounds of South Sea Island cotton, the last of which was grown on the plantation at Raaluan, the only cotton farm in New Britain. Mrs. Forsythe gives employment to fifty Europeans and several hundred natives. The out stations include such important places within the Imperial German protectorate as Land Leap, Cabauca, Mucap, Labapupi Corew, Color Brende, Rianol, Cabicul, Tomalebang Touve, Raalun, Ducucibi Unagick, Toamerican, Barawan, Devoron, Carridige, Woolour, Malaguanan Nardup, Cape Stevene, Rotowool, Kabucada, Lila, Rola, and Cabrira, all of which are on the coast of New Britain; also Allebehan, Cape Geroy, southwest end of New Ireland; the islands Nanuk, Nusa, northeast coast of New Ireland; Matinsala, Lessanda, Teneshaw, Lamerrottana, London, east end of New Ireland; Camegos, and Coromutt. There are also a number of stations in the Admiralty Islands and the islands of St. John, Gerris, Denny, Fisher, and the Gawa Islands. Outside of the German protectorate there are stations at the Fead group, Sir Charles Hardy group, the Lord Howe Islands, and others. Mrs. Forsythe rendered very effective aid to me in the preliminary steps which secured to the United States for a period of ten years the use of the harbor of Pago Pago as a coaling station, and not long since she made an offer to the American Government of 20 acres of ground on her own property in the

island of Malulu for another coaling station. The island of Malulu is outside of the German protectorate, and as no nation has as yet set up a claim to it, she is quite anxious that her offer shall be accepted.

Mrs. Forsythe's firm is not the only American one engaged in trading in the Bismarck Archipelago and adjacent islands, for there are several others, notably Whiteman Brothers, of San Francisco, and the well known firm of A. Crawford & Co., of San Francisco. These two firms, however, did not begin operations there until 1885.

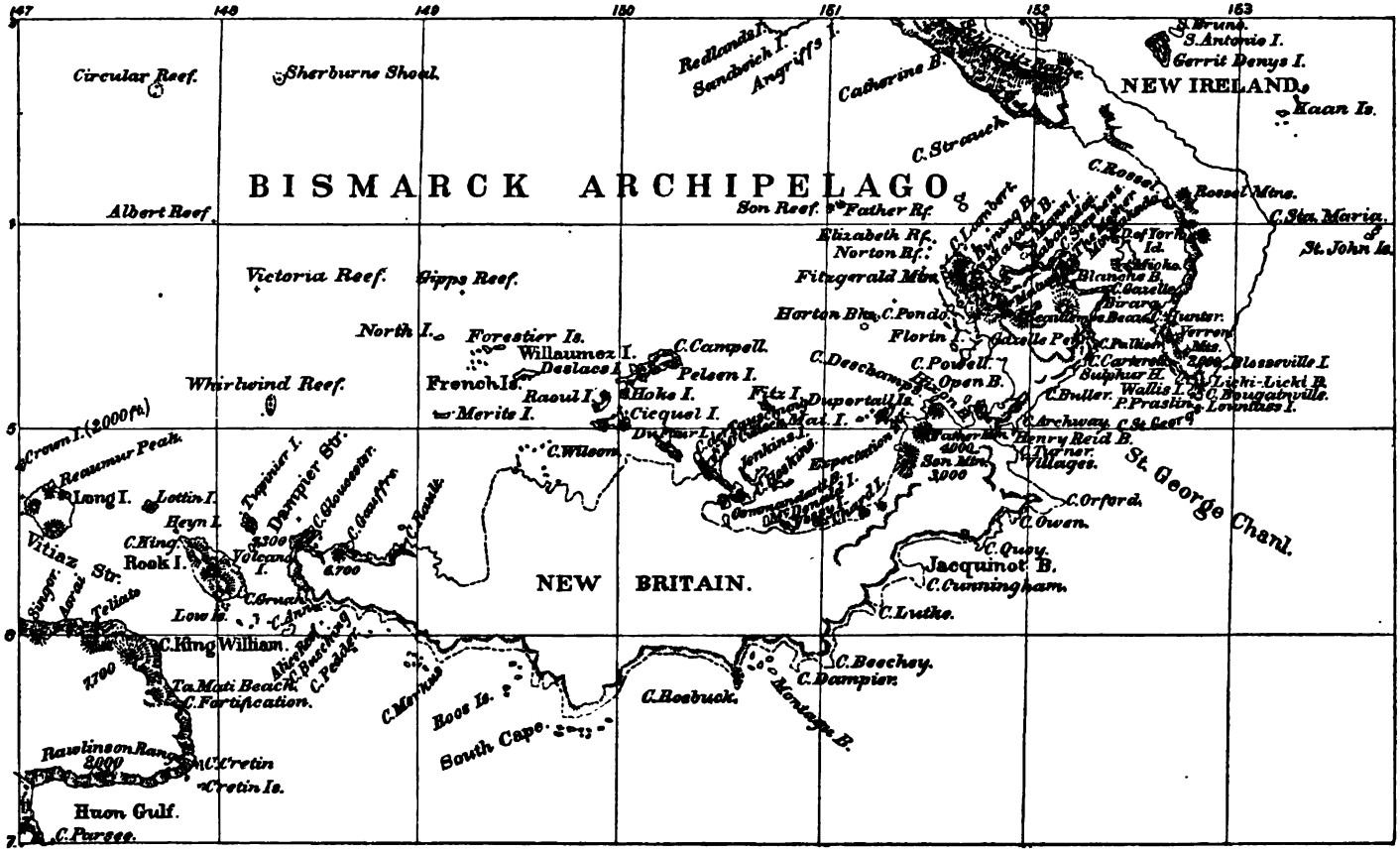
Whiteman Brothers in July of that year established a head station on an island in the lagoon lying between Boker and Bouganville, and they have recently taken active steps to extend their business both in a northern and southern direction. Their produce is at present collected in the smart little schooner *New York*, and is transshipped in larger vessels belonging to their firm.

The firm of A. Crawford & Co. is, perhaps, the oldest San Francisco house now connected with the Pacific Island trade. Their operations were for a long time confined to the Solomon Islands, Samoa, and the Caroline Islands, but in November, 1885, they extended their business in the direction of the Bismarck Archipelago, and erected a head station at Rulance, about 2 miles from Raaluan. The schooner *John Hancock* and one or two other vessels are constantly employed by them in collecting produce in that portion of the Pacific. From the well-known enterprise of this firm it is not at all unlikely that their trade in the archipelago will soon swell to large proportions. The method of conducting trade there is by what is called "barter," meaning simply a traffic conducted by exchanging one commodity for another in distinction to a sale and purchase when money is paid for the commodity. The articles desired by the natives in exchange for their products consist principally of tobacco (American twist), pipes, hardware (such as axes, shingle and claw hatchets, knives from 4 to 18 inches in length, hammers, nails, etc.), kerosene oil and lamps, crackers, shirts, beads, cotton goods, prints (bright colors), tinned salmon, sugar, flour, salt, etc.

The accompanying map, kindly drawn for me by Mr. Alfred Dulon, of New York, shows the position of nearly all the important places in the Bismarck Archipelago.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Sydney, New South Wales.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148
149
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151
152
153
BISMARCK ARCHIPELAGO
NEW IRELAND
NEW BRITAIN.
St. George Chanl.
Circular Reef.
Sherburne Shoal.
Albert Reef.
Victoria Reef.
Gipps Reef.
Whirlwind Reef.
Son Reef.
Father Rf.
Elizabeth Rf.
Norton Rf.
Fitzgerald Mtn.
North I.
Forestier Is.
Willaumez I.
French Is.
Merits I.
Rascal I.
Hoke I.
Cicquel I.
Pelsen I.
Deslacs I.
C. Campell.
C. Deschamps
C. Powell.
Open B.
Florin
Horton Bln.
C. Pondo.
Fitz I.
Dapertail Is.
Expectation I.
Henslow I.
Fleming I.
Crown I. (2000 ft.)
R. Reaumur Peak.
Long I.
Lottin I.
Heyn I.
Rook I.
Vitiaz Str.
Dampier Str.
Typinier I.
C. Gloucester
C. Beaufre
C. South
C. Wilson
C. King
Yolcano I.
3300
4700
C. Gruai
C. Arnim
Low I.
C. King William.
Ta. Mati Beach.
C. Fortification.
C. Peard
Alice Bay
C. Beaching
Telinte
Singor. Aorai Str.
7700
Rawlinson Range
8000
C. Cretin
Cretin Is.
Huon Gulf.
C. Puysee.
C. Merlus
Rose Is.
South Cape.
C. Rosebuck.
C. Dampier.
C. Beechey.
Montagu B.
C. Luthe.
C. Cunningham.
Jacquinot B.
C. Quoy.
C. Owen.
C. Orford.
Henry Reid B.
Native Villages.
Son Mtn. 3000
Father Mtn. 4000
Redlands I.
Sandwich I.
Arago I.
Catherine B.
C. Strauch
C. Rossel
Rossel Mtns.
C. Ste. Maria.
St. John Is.
S. Bruno.
S. Antonio I.
Gerrit Denys I.
Kaan Is.
D'Entrecasteaux Rocks
Lambert I.
Byron B.
Duke of York Id.
Nakoko
Blanche B.
C. Gazelle
Bivara
Hunter
Varren Mts.
Gazelle Pen.
C. Pallier
C. Carkeek
Sulphur H.
Wallis I.
Buller.
P. Prasling
Archway
C. St. Geet
Bougainville.
Lirki-Lirki B.
Lowndes I.
2000
Bisseville I.

MANCHOORIA.

REPORT BY MINISTER DENBY, OF PEKING.

FOREIGN ACQUISITIONS IN CHINA.

The acquisition of Tonquin by the French and of Burmah by the British in 1885–'86 diverted the attention of the world from the vast territories north of China—regions which, it would not be too hazardous to assert, will some time be subjected to a similar experience. The completion of the Trans-Caspian Railway, the agitations and intrigues in Corea, and the difficulty and petty war on the confines of Thibet have again, however, directed the eye of the East to the tributary countries and outlying provinces to the north and west of China.

The history of modern intercourse between China and the outside world has been a succession of appropriations, by various powers, of the apparently superfluous territory of this unwieldy Empire. It is certain that, since the relative power of Russia and China in the art of war has so changed as to keep Russia no longer on the defensive, immense additions have been made to the czar's dominions in eastern Asia. The first Russian expedition in the regions of the Amoor was carried out near the middle of the seventeenth century. Settlements on the lower Amoor were formed, only to be destroyed by the troops of the Chinese Emperor Káng Hsi.* Two hundred years elapsed when, in the years 1850–'53, further expeditions of great magnitude were dispatched and settlements made at several places on the sea-coast and on the lower river. Resistance on the part of China being out of the question, and protests vain, these acquisitions were legalized by the treaty of Aigun in 1858, which ceded all the territory on the left bank of the Amoor to Russia. In 1860, in the midst of the great difficulties caused by the triumphant Tai-Ping rebellion, China was prevailed upon to sign away the splendid additional territory now known as the province of Primorsk, including all the Manchoorian sea-coast east of the Usuri River, extending from the mouth of the Amoor to Usuri Bay, the site of the present flourishing Russian City of Vladivostock. The territory taken over by Russia in the Chinese province of Ili, about this time, on account of the inability of China to cope with the great Mohammedan rebellion, was returned in 1880.

POSITION AND EXTENT.

Manchooria comprises a territory of about 800 miles in length by 500 in breadth. It is bounded on the north by the Amoor River, on the east by the Usuri, on the south by the Gulf of Pe-chia-li and Corea, on the west by the rivers Nonni Sungari and the Palisades (part of the Great Wall of China†). It is composed of the three provinces of Liao-Tong, Kirin, Tsi-sitkar, in the west, east, and north, respectively. The discovery of gold on the Amoor,

*"The Russians on the Amoor." †"Journeys in North China," Williamson.

the great timber resources of the country, the open ports on the south, all tend to make this region a desirable possession to any power, and especially to one about entering on naval construction.

PRODUCTS.

Manchooria is a fertile country, producing crops of millet, corn, hemp, barley, poppy, rice, and beans, which compare favorably with those of China and India. The tobacco is good, though of a very mild quality. The rice is chiefly the upland rice, which, in China, is inferior to wet rice, but here seems to attain to unusual excellence. The staple crops of the country are, however, beans and peas, and the greatest products are bean-oil and bean-cake. These, with raw silk and dog and goat skins, form the main articles of export from New-Chwang, the only port where statistics of export are kept. The bean products are shipped chiefly to other ports in China, where the oil is used in cooking and the cake as food for animals and as fertilizers for sugar-cane. In 1887 there were exported from New-Chwang 2,031,348 piculs (1 picul = 133 pounds) of bean cake, worth 1,617,921 Haikwan taels (1 Haikwan tael = $1.20 United States gold), and 2,595,963 piculs of beans, worth 2,379,579 Haikwan taels.* Of the total exports from New-Chwang this constituted nearly four-fifths in value, the next largest item being wild raw silk to the sum of 647,856 taels. The raising of dogs and goats for their skins is a flourishing industry. The excessive cold develops a coat of a quality scarcely to be matched elsewhere.

Mr. James, one of the most recent travelers in Manchooria, speaks, in his book "The Long White Mountain," in enthusiastic terms of the crops of millet. The variety which particularly attracted his attention was that known in China as ku-tzu (*Setaria italica*). "It is singular," he says, "that this staple, one of the finest imaginable for man or beast, has not spread to India."

OPIUM.

One of the great crops of Manchooria, and one which is increasing in importance, is poppy. The cultivation of this plant, while covering enormous areas in other parts of China, has nowhere more rapidly increased than here. In 1864 a Chinese customs report showed that in the preceding year (1863) no native grown opium had been used in Manchooria. That used was all foreign. There was in that year no opium exported, and the commissioner of customs expressed the opinion that native opium could not compete with foreign. In 1887, twenty-three years later, a customs report shows that opium was extensively cultivated all over Manchooria. The output was estimated at 1,066,400 pounds, and so popular had it become that no other opium was longer sold there.† The excess over consumption in districts where produced is smuggled to other parts of China, where its excellent quality gives it ready sale.

Mr. James, in his book above referred to, appears, as is natural in an official of the Indian Government, a strong champion of opium. He says,

*Customs Returns of Trade, 1887. † Customs publication, "Native Opium, 1887."

"To my mind it is one of God's good gifts, like wine that strengthens man's heart or tobacco that soothes his nerves. * * * Opium as a luxury is in general use in Manchooria, and a healthier, stouter set of people can nowhere be found. The pipe and lamp are to be seen in the parlor of every respectable merchant. * * * The fact is that, taken in moderation and upon a full stomach, opium is no worse than a cigar, and most sensible foreigners in China will tell you so." About the most serious objection Mr. James can find to it is that "it leads to a terrible waste of time." This objection, he points out, is obviated in India by taking it in a liquid form. Mr. Williamson, another Englishman who made a journey through Manchooria a number of years ago, speaks in entirely different terms. He says of opium: "It's effects upon the population are most melancholy. Farmers' sons and the majority of young men are addicted to it. * * * Sad is the havoc this drug is making in China, and the worst is yet to come."

The opium evil has doubtless been exaggerated by missionary zeal, but no candid person can fail to recognize that the immense majority of observers, both lay and missionary, deplore the use of opium in Manchooria, as elsewhere in China, as an unmitigated evil.

BRIGANDAGE.

The success of Chinese administration in Manchooria has been marked, but much remains to be done. The greatest curse of the country is brigandage, which is constantly practiced to an alarming extent. From secure mountain retreats bands of mounted robbers come forth and place cities and whole districts under contribution to them. The efforts of the Government are unceasing and relentless in dealing with this evil. The retreats of bands are surrounded and the robbers are shot down by scores or brought to the nearest city to be beheaded. As the country fills up with Chinese settlers the authorities are more successful in these efforts. A matter more difficult to remedy is the official corruption with which Manchooria is afflicted.

INSECTS.

The swarms of insects at certain seasons of the year are a great scourge to human beings and to domestic animals. It is customary to proceed to agricultural employments with burning wood in the hand and an iron ring with sticks of burning wood inserted in it on the head.

HISTORY.

Manchooria will always be an interesting locality to the student of Chinese history. It was from here that came the races which established the present rulers of China on the throne, though, repeating the history of former conquests of China, the conquered have assimilated the conquerers, and far outnumber them even in their own country. So far has this process gone that in Manchooria the Chinese language has supplanted Manchoo among Manchoos themselves. The present Government fully realizes the importance of this province and the dangers which threaten it.

FORTIFICATIONS.

Immense fortifications have been and are being constructed along the Amoor and the Usuri Rivers to counterbalance Russian operations in Siberia and Primorsk. The work of building forts in remote localities and arming them with Krupp guns, which had to be hauled hundreds of miles over the worst roads in the world, has been done with a spirit and energy which show a determination to be prepared for a powerful enemy.

CHARLES DENBY,
Minister.

LEGATION OF THE UNITED STATES,
Peking, March 28, 1889.

COMMERCE OF MESSINA.

REPORT BY CONSUL JONES FOR 1888.

IMPORTS, EXPORTS, AND TONNAGE.

The total imports for the calendar year 1888 amounted to $3,922,665, upon which the duties levied amounted to $1,006,950. The value of the total exports for the same period was $7,547,506, and the amount of duties levied was $27,765. These figures show a decrease in the imports of $1,463,047, and a decrease of $1,804,483 in the exports as compared with the year 1887.

The tonnage of vessels entering this port during 1888 was 794,245 against 1,080,485 tons during 1887. No American vessel entered this port during 1888.

Petroleum, valued at $43,856, was the only article imported directly from the United States. The value of petroleum imported from the United States in 1887 was $75,600.

Grain and woolen and cotton goods are the articles of import which show the greatest falling off. The imports of wheat fell off during 1888 owing to the large importations during 1887, made in anticipation of an increase in the import duty, which, in fact, has been raised twice, the second time early in 1888. Stocks are running out, and this article must again be imported in large quantities because Sicily does not produce sufficient breadstuffs for her wants.

The imports of foreign woolen and cotton goods are likely to become smaller in future under the operation of the new protective tariff. Probably the present bad state of credit in Sicily and Calabria has also contributed to a decrease in the importation.

ORANGES AND LEMONS.

The orange crop of Calabria and Sicily is estimated to be 20 per cent. larger than that of 1887; prices have been 25 to 33 per cent. lower this season. Shipments to Trieste have increased, the import duty in Austria having been abolished since about the end of 1887.

The lemon crop of Calabria and Sicily of 1888 has been 20 per cent. larger than that of 1887; prices have been from 15 to 20 per cent. lower this year. The price of lemon-juice has gradually declined since last November from £20 to £16.10*s* sterling per pipe, a large stock of citric acid having accumulated during the summer of 1888, which checked consumption. The fall in tartaric acid also affects the price of citric acid unfavorably. The value of oranges and lemons exported to the United States in 1887 was $2,142,050 as against $2,005,291 for 1888, a falling off of $136,759.

WINE AND OIL.

The wine crop of 1888 has been larger than that of 1887.

The oil crop of 1888 has been larger than that of 1887 in Sicily. In Calabria the 1887–'88 crop was much larger than that of 1888–'89. A full crop was expected in Sicily and East Calabria this season, but it was greatly damaged by the oil-fly.

FINANCES.

There is great stringency in the money market at this time, which is due to the many recent failures and general distrust. This state of things has been brought about by several causes. The Government ordered the banks of issue to reduce their bank-note circulation to the limits prescribed by law, which had been exceeded. Owing to this inflation in the currency gold commanded a premium which the Government feared would soon advance further. From 1884 to 1887 the Banca Nazionale and the Banca di Sicilia, the principal banking institutions of this island, were reckless in giving credit. To stimulate production they thought it expedient to establish agencies in all small rural centers. These agencies discounted notes, mostly those of landed proprietors, and rediscounted them at the banks at a lower rate of interest. For a time all went well, and there arose a strong competition between the two great banks for all discounting business in both large and small centers. When, however, the Government ordered the restriction of the circulation of bank-bills it was found that a great many notes could not be taken up. Much of this money has been lost by the general shrinkage in the value of all Sicilian produce, and a large percentage of it is at present locked up in new houses, new machinery, and in improvement of lands, and it can only be at a heavy loss to the banks and money-lenders or at the expiration of a considerable lapse of time that even a portion of this money can return to the channels of trade.

TAXATION.

The mode of taxation in Italy is very irksome, is an impediment to production and increases the natural disinclination of the inhabitants of this island to enter into new enterprises.

WALLACE S. JONES,
Consul.

UNITED STATES CONSULATE,
Messina, April 13, 1889.
No. 105, May——10.

PLEURO-PNEUMONIA EXPERIMENTS IN QUEENSLAND.

The following is transmitted to the Department of State by Consular Agent Harris, of Brisbane, through the courtesy of P. R. Gordon, esq., chief inspector of stock for Queensland:

REPORT OF THE COMMISSION.

The following is the report presented to the colonial secretary by the royal commission appointed to inquire into matters relating to the cultivation of the vaccine of pleuro-pneumonia, together with the report of Dr. Germont and M. Loir on the results of their recent experiments:

To the Honorable the Chief Secretary.

SIR: In accordance with the instructions contained in your letter of the 16th of November last, whereby we were requested "to inquire into the origin and development of pleuro-pneumonia in horned cattle, with special reference to the cultivation of a vaccine for that disease," we have now the honor to furnish you with our report of the proceedings and investigations that have been carried on in reference to the above subject since that date.

On arrival of the French scientists, Dr. Germont and M. Loir, and after consultation with them, we made the necessary arrangements for fitting up a temporary laboratory in the old immigration barracks and also obtained the sanction of the chief inspector of stock to make use of the sheep quarantine ground for the purpose of keeping the animals to be experimented upon under continuous observation.

As much of the necessary apparatus as could be obtained in the colonies was procured at once and the remainder ordered by cable from London. Owing to the special nature of the inquiry most of the instruments had to be made, and we were therefore not able to equip the laboratory as quickly and fully as was desirable; but, owing to the kindness of Dr. Germont and M. Loir, who placed the whole of their apparatus at our disposal, we were enabled to proceed with the experiments without any delay.

On the 16th day of November a bullock, diseased with pleuro-pneumonia, was found no the run of Mr. De Burgh Persse, of Tabragalba, and an ample supply of virus obtained from it for the commencement of the experiments. The taking of the virus, under all the precautions necessary for obtaining it in an uncontaminated state and free from contact of impure air, was fully explained to us by Dr. Germont and M. Loir, and we at once saw the necessity for a totally different method of procedure from that usually adopted. As it is upon the entire exclusion of all impure or foreign germs from the virus thus obtained that the success of the future operations, especially in regard to the preservation of the virus, depends, the absolute necessity for the strictest care and cleanliness is self-evident; and we would call the attention of all those interested to this most vital point in making any preparations for the purpose either of transmitting the virus or for inoculation.

We may here mention that the virus obtained from the Tabragalba bullock was kept for some weeks not only at the ordinary temperature of the laboratory, ranging from 75° to 100° F., but also in an ice-chest, at a temperature of from 35° to 40° F., and that it was found to be fully effective in both cases for a period of seventeen days from the date of taking. After that term it appeared to gradually lose its strength. At what age it would become totally ineffective was not ascertained, as under the present improved postal arrangements tubes of virus could be transmitted to any part of the colony within three weeks, and, as other and more important points were pressing for solution, we did not pursue the investigation of this subject any further. It is, however, a very important part of the inquiry, and we recommend that in any future experiments special attention should be directed to it.

The accompanying report of Dr. Germont and M. Loir sets forth the progress and result of their experiments in such a clear manner that any addition to it by us would be almost superfluous. From the large number of animals operated upon (forty-seven in number) the

experiments were rendered much more trustworthy than if single cases had been taken, and in view of this, and noting the extreme care and accuracy with which the whole series of experiments were conducted, as also the absolute refusal on the part of the scientists to take anything for granted that was not fully demonstrated by experiment, we are of opinion that the conclusions arrived at and embodied in the inclosed report are fully justified.

In reference to the isolation and cultivation of the microbe of pleuro-pneumonia, which has, as yet, not been actually demonstrated, we are of opinion that sufficient evidence has been obtained by Dr. Germont and M. Loir to warrant us in stating as extremely probable that even if the specific microbe can not actually be isolated, still that a cultivated virus can be produced which will give the desired result. The experiments made on animals inoculated with an artificially-cultivated virus obtained from the blood of a calf dead of pleuro-pneumonia have given results which are very promising, and which we hope will soon be confirmed beyond a doubt by the discovery of the specific microbe of pleuro-pneumonia.

We are informed by Dr. Germont and M. Loir that their report is to be taken as an interim one, and made especially for the general public of Queensland. A fuller and more scientific one will be issued from Paris after laying their views and conclusions before M. Pasteur and obtaining evidence upon certain points which it was impossible to get in so short a time and with the limited means at their disposal in the colony.

Considering the successful issue to which these preliminary experiments have been brought, and with the knowledge that through them an immense benefit has been conferred upon the cattle-owners of Queensland, we recommend that an honorarium of £1,000, in addition to the sums stipulated for and already paid, be granted to Dr. Germont and M. Loir.

We think this report would not be complete without our calling your attention to the great advantage that would be conferred upon cattle-owners by giving practical effect to these investigations and thus placing a supply of pure virus at all times at their disposal. To do this it would be necessary to continue the present arrangements, and if the services of a competent person could be obtained there is every probability of the institution becoming self-supporting through payment being made by stock-owners for pure virus. A certain definite and valuable result has been obtained from the experiments just concluded, with a promise of still further developments being made. To let the matter rest now would, in our opinion, be a waste of both time and money, and we therefore respectfully make the following suggestions:

(*a*) That a site be granted for the establishment of a permanent laboratory.

(*b*) That suitable buildings be erected thereon for conducting experiments on all diseases of stock.

(*c*) That the services of a thoroughly skilled scientist be secured as soon as possible for the purpose of continuing the preparation of virus, as suggested in Dr. Germont and M. Loir's report, and eventually to take charge of the permanent institution.

(*d*) That power be given to sell virus to stock-owners requiring it.

(*e*) That the present board be authorized to prepare and print an illustrated pamphlet, containing as much information as can be obtained for sale to the general public.

It may not be deemed outside our province to refer to the fact that, as the cost of these experiments has been defrayed from a fund contributed solely by the stock-owners of Queensland, the investigation is to that extent a private one. The knowledge gained from, and the advantages sure to follow, these investigations will directly benefit every stock-owner in Australia, and indirectly the whole community. In view of this we may be permitted to suggest that the other colonies on the Australian continent may be invited to contribute towards the cost of further inquiries in the same direction, from which they must ultimately derive an equal benefit with Queensland.

We have the honor to be, sir, your most obedient servants,

EDWARD PALMER, Chairman.
JOHN THOMSON, M. B.
JAMES TOLSON.
P. R. GORDON.

REPORT OF THE FRENCH SCIENTISTS.

The following is the report by Messrs. Germont and Loir (M. Pasteur's representatives) upon their inquiry as to the protection of cattle against pleuro-pneumonia (translated from the original, in French, by Mr. H. S. Dutton):

BRISBANE, *March 20, 1889.*

At the request of the Government of Queensland, we have endeavored to solve the following problem: To find a means which will allow stock-owners to procure for themselves at any season of the year a sufficient quantity of virus to enable them to inoculate a mob of cattle against pleuro-pneumonia.

The best solution would be to be able to cultivate artificially, in an appropriate medium, *in vitro*, the virus of pleuro-pneumonia. As this disease is infectious and contagious it is probably caused by a living agent — a microbe. But up to the present all the numerous efforts undertaken to isolate and cultivate this microbe appear to have failed. It would, therefore, have been rather presumptuous on our part to have limited our researches to this particular point with any hope of success; a study of this nature demands in effect special and complete laboratory arrangements, many tentative researches, and depends much on chance.

We have endeavored to surmount the difficulty by adopting another course.

Resembling in this point the majority of other contagious diseases, pleuro-pneumonia can be transmitted by inoculation. If under the skin of a "new" animal — that is to say, of an animal which has not already been subjected to the attacks of the disease — a few drops of virus collected from the lung are injected, an œdema develops itself at the point of inoculation, which spreads considerably and generally causes death. In its turn this œdema is infectious, and can be used to practice fresh inoculations on other animals, these inoculations giving rise to the same phenomena.

Starting from this fact, which has been recognized for many years, we have considered that the liquid constituting this subcutaneous œdema could be used for inoculations at the tail, after the Willems method, as it is practiced throughout the world.

But at the beginning we have to reply to an objection.

We were told that this subcutaneous œdema following inoculation has nothing to do with pleuro-pneumonia; that it is a new and different disease, a kind of septicemia; that by inoculation the original disease can never be reproduced with its ordinary anatomo-pathological characteristics; that, in a word, it is impossible to cause either pneumonia or pleurisy.

We reply, first of all, that it is a mistake to believe that the specific character of a disease consists in an habitual anatomical localization. In tuberculosis, for example, the usual seat of the disease is the lung, but cases of tuberculosis without pulmonary lesions are frequent, and it is even possible to produce a generalized tuberculous infection without tubercules. There is not always a rash in scarlatina, nor always an eruption in measles, and the subcutaneous inoculation of the diphtheria microbe gives no diphtheric angina.

On the other hand, we have frequently been able to provoke pleurisies with production of false membranes by the direct injection of virus into the pleura, or even by a simple subcutaneous inoculation. In one case we have been able to reproduce a veritable pleuro-pneumonia by bringing the virus directly in contact with the lung by an inoculation in the jugular vein. Nevertheless, we recognize the fact that in the case of subcutaneous inoculation only a local œdema is generally provoked.

But the liquid contained in this œdema has this peculiarity in common with virus taken directly from the lung; that if it is virulent for horned cattle, it appears to have no effect on other animals. As Willems says, "The virus of pleuro-pneumonia is of a specific nature * * * the bovine race only is affected by its inoculation, for other animals of different kinds inoculated in the same manner and with the same liquid feel no bad effect."

We have in the same way been able to inject large doses of subcutaneous virus under the skins of fowls, pigeons, guinea-pigs, and goats without the least appreciable effect, while this virus inoculated in the skin of young calves reproduced the same œdema.

In any case this discussion is a barren one, and if the experiments we have been able to carry out prove that subcutaneous virus protects in the same degree as natural virus, this practical result will justify the disregard of any more or less specious theoretical objection.

We have thus considered that by subcutaneous inoculation it was possible to cultivate, so to speak, the virus of pleuro-pneumonia, and to have always at hand the materials necessary for practical wants. We have considered that it would be possible to do for pleuro-pneumonia something analogous to what has been done for nearly one hundred years past for vaccine. The virus of vaccine can not be artificially cultivated in a medium devoid of life, and to preserve it it is necessary to have recourse to successive inoculations from calf to calf, or from man to man. It is known, on the other hand, that vaccine can be preserved for some time in specially prepared tubes, or on strips of glass, if it is collected under proper conditions.

Had the same thing been possible for pleuro-pneumonia, the problem submitted to us would practically have been solved.

The questions which we had to study were the following:

(1) Can sufficient virus be obtained by inoculation under the skin to inoculate a mob of cattle in the tail?

(2) Does this subcutaneous liquid, when it has been inoculated in the tail, protect the animals so operated upon against a second attack of the disease as effectually as the natural virus collected from the lung or from the pleura?

(3) Can the virus be preserved, and if so, how long?

(*a*) When an ox is inoculated in the tail with pleuro-pneumonia virus, in the great majority of cases nothing is provoked but a slight local swelling which disappears rapidly. Sometimes, however, the œdema extends to the upper portion of the tail, from there to the adjoining parts, and death is frequently the result of this complication. What is the exception after inoculations as they are made in practice is the rule if the virus be injected under the skin of the neck, or of the thoracic walls, in those parts which veterinarians designate for this reason "forbidden regions" (Bouley). However, even under these conditions death does not always ensue, and the œdema remains sometimes very limited in extent. To obtain large œdemas with the greatest chances of death, operations on animals which are too old must be avoided, and calves of from six to twelve months old must be chosen in preference. Very young calves are not suitable subjects for experiment. They have not sufficient resisting power, even when they are nourished with milk; and, moreover, it would appear that the malady tends to generalize itself, to assume abnormal forms, and to kill by general infection without localization. With adult animals there is the risk of operating on animals which have already been attacked by the disease in a form more or less light, or actually attacked by a different disease, tuberculosis, for example. However, all conditions being equal, calves are more susceptible than adult animals. Operations on thin and impoverished animals must also be avoided; besides the fact that the disease may follow an abnormal course, the skin of such animals is deficient in suppleness, and the œdema never contains such a large quantity of liquid.

When inoculation is performed under the skin of the thoracic walls of a young calf — behind the shoulder, for example — with some drops of virus taken from the lung or the pleura of an animal which has been killed during the second period of the malady, a slight swelling is observed after between five or ten days, or sometimes a little later, which increases during the following days both in thickness and in width. This swelling is painful when pressed, and as it expands the temperature becomes progressively higher. At the end of one or two weeks the swelling ends by covering the whole of the abdomen, extending sometimes from the pubic (share-bone) to the middle of the breast-bone and even to the neck. Generally, however, it remains limited to the side of the body on which the operation was performed. On a level with the parts last attacked the œdema is soft, whereas on a level with the regions first involved it becomes harder and harder. The temperature, which under normal conditions averages 102° to 102.5°, rises during the second week after inoculation to 105°, 106°, sometimes 107°, or even 108° F. It often decreases one or two days before death.

In spite of their feverish condition the animals continue to eat and to ruminate, and it is only during the last days of the disease that they refuse all nourishment, and that rumination ceases. Death supervenes without convulsions.

On opening the body, if the skin on a level with the œdematous parts be carefully dissected in such a manner as to form a sort of bag where the lymph accumulates, it is seen that the latter exists in very considerable quantities; sometimes more than two or three pints can be collected. This lymph, which abounds more especially on a level with the parts last attacked, is of a beautiful amber color, almost limpid, and in no degree mixed with matter. On a level with the parts first attacked the lymph is not abundant, and the tissue is thicker.

Occasionally the inflammatory process spreads into the thoracic cavity, which it penetrates in following the vessels of the neck, and at the opening of the thorax a more or less abundant pleuritic discharge is found with production of false membranes.

Animals do not always succumb to the consequences of inoculation, and the chances of survival are all the greater as the animals are of a more advanced age. The nature of the virus and the quantity injected must also be taken into account.

The following is a brief résumé of the experiments we have made on this particular point:

With virus collected at Tabragalba from an ox killed at the second period of the disease (red hepatisation), we inoculated two calves which died at the end of three weeks with a very considerable œdema. With the lymph collected from one of them we inoculated three others, which died likewise after an illness of twenty to twenty-eight days. With the lymph taken from one of the latter we again inoculated a lot of four calves, of which one showed only a very limited œdema, two showed an œdema of considerable size, with high fever, and ended by getting better, and the fourth died.

An ox of three years old, very thin, inoculated later on with the lymph of a calf which had died after inoculation with virus kept for a month, became very ill, developed a large œdema, and also recovered.

So that out of ten animals inoculated with fresh virus, or virus kept for only a very few days, we had six cases of death, two cases with very considerable œdema, which could have been utilized had the calves been killed at the time when the disease was in full evolution, and the temperature was between 105° and 106° F. In two cases the œdema could only be utilized for a restricted number of inoculations.

With the virus which we collected at Monsildale we inoculated nine animals of different ages from one year to three years. Four only died. Two calves of one year old had a very large œdema, but recovered; one heifer of three years old developed a very limited œdema; the two others show a larger œdema, but they also recovered.

To what must this difference in the result be attributed? Why did the virus collected at Monsildale prove itself less active than that collected at Tabragalba? In the case of the ox killed at Tabragalba the disease was in full evolution, while in that of the ox killed at Monsildale the animal had been ill for a long time—was perhaps on the way to recovery—and stock-owners have long known that the best virus is that obtained from the animal which has not passed the second stage of the disease.

It is therefore probable that lymph taken from an animal at the different stages of the disease does not always possess the same virulence, and fresh experiments will perhaps show that the maximum of virulence is reached at the moment when the œdema continues to enlarge and the temperature varies between 105° and 107° F. We think that at this moment a calf possessing an œdema of large enough extent to satisfy practical wants can with all security be killed.

But, after all, it is not necessary to give too much attention to this difficulty, for if there is a large mob of cattle to inoculate it will be safer to inoculate two or three calves, and there will be at least one case of death with the requisite quantity of lymph.

(*b*) Does the subcutaneous liquid, when inoculated in the tail, protect animals against a second attack of the disease in the same degree as the virus taken from the lung or from the pleura in a spontaneous case?

Willems, a Dutch veterinarian, was the first to affirm that animals inoculated in the tail with the virus of pleuro-pneumonia are refractory to a second attack of the disease and "brave epizootic influences with impunity." What is the proof of this assertion? If the manner of contagion of the disease were known, and if there were a certain means of communicating it, with its ordinary anatomo-pathological characteristics, this proof would be easily given; it would be sufficient to protect the animals and to show that they are refractory to the disease, while other unprotected animals do not resist it. But if this proof be wanting, we have on one hand the results of the practical experience of stock-owners, and in Queensland there is such a conviction as to the efficacy of the Willems method that we will insist no longer on this point. We have, on the other hand, the fact that animals which have been inoculated in the tail resist a second inoculation in a forbidden part. We have just seen that if inoculation is performed in the neck or behind the shoulder of a new animal (one which has never had the disease, or which has never previously been inoculated), an œdema is caused which generally proves fatal. This inoculation produces, on the contrary, no effect if it has been preceded by an inoculation in the tail. This is a scientific fact which has been known for a long time, and it will suffice to read the articles of Professor Bouley ("Recueil de Médecine Vétérinaire") to be convinced of its truth.

What we have to do is to prove that the lymph collected in the subcutaneous œdema possesses equally the same protective qualities as does lymph collected in the lung or in the pleura.

With this end in view we made the following experiments:

We inoculated in the tail with subcutaneous lymph three heifers of one to two years old and two bulls of one year old. Two other heifers, which were to serve as a term of comparison, were also inoculated in the tail, but with natural virus collected at Warwick.

The animals inoculated with subcutaneous lymph underwent no perceptible inconvenience, only a very light swelling on the tail, exactly limited to the point of inoculation, appearing four or five days after the operation, and not lasting more than seven or eight days. The swelling was accompanied by light feverish symptoms, the temperature not rising above 104.6° F.

One of the heifers inoculated with the Warwick virus was affected in exactly the same manner, but in the case of the other one the swelling on the tail rose 1½ feet above the point of inoculation. Inoculation had been tried on this heifer with a slender glass tube, instead of using the syringe, with which the others were operated on, so that a small bleeding wound had been made and the bones more or less touched during the small operation. But the temperature followed exactly the same course as in the other cases.

We had now to submit these animals to the test of a second inoculation, made this time in aforbidden region. After an interval varying from six weeks to two months, these seven calves were, therefore, inoculated afresh behind the shoulder with about 2 centimeters of virus (about 32 drops) collected at Monsildale from an ox suffering from pleuro-pneumonia at the period of gray hepatisation.

The same day, with the same virus, and with the same quantity thereof, a second lot of nine animals was inoculated for the first time, behind the shoulder.

Another lot of four calves, which had been used for previous experiments with the subcutaneous virus, and which, as we said above, had resisted an inoculation on a level with the thoracic walls, were also inoculated on the same day with the same dose, with virus collected at Monsildale. So that we had on the one hand eleven animals protected, and on the other nine unprotected.

The result of this experiment was as follows:

Among the protected animals two had a very slight œdema at the point of inoculation and none died. While of the nine unprotected ones four died with the ordinary œdema, four had an extensive œdema and recovered; one heifer of three years old had only a very limited and transitory œdema.

The conclusion to be drawn from this experiment is a dual one. It shows first of all that subcutaneous virus and natural virus collected in a spontaneous case of pleuro-pneumonia

have the same effect, and that their use is optional for protective inoculation in the tail. But this experiment shows us, moreover, that the protection is incontestible; it gives a new scientific confirmation to the data furnished by observation and by practical experience. Stock-owners have noticed that animals inoculated in the tail can, as Willems says, "brave epizootic influences with impunity." We have proved once more that animals so inoculated could resist an inoculation which kills four-ninths of unprotected animals.

There is no doubt that the demonstration would have been still more conclusive if we had been able to procure a more active virus than that we collected at Monsildale, but it is sufficient as it stands.

We now find ourselves in possession of two leading facts: (1) By inoculation in a forbidden part of a young calf of from six months to one year old, a sufficient quantity of lymph can be obtained to inoculate from one thousand to fifteen hundred head of cattle at least. (2) This lypmph protects animals inoculated in the tail by the ordinary method against a fresh attack of the disease.

If, moreover, it be possible to preserve this lymph in a virulent state for a long enough period, it will be understood that any stock-owner in the colony will be able for the future to procure the necessary virus to protect his animals.

Many processes have been suggested for the preservation of pleuro-pneumonia virus. It has been proposed, for example, to mix it with glycerine or with different antiseptics; efforts have been made to desiccate it, etc. As these processes are known by everybody we will follow them no further; it is generally recognized that they are very uncertain, more often illusory, and sometimes even dangerous.

M. Pasteur's researches have taught us that the most corruptible organic matters—blood, urine, animal or vegetable infusions—could be preserved indefinitely without undergoing any putrefaction if precaution were taken to keep them sheltered from outside germs. By the same method M. Pasteur, and after him all the bacteriologists, have shown that the virus of various infectious diseases could be kept in a state of purity and with all their activity. Thus, to cite only one example, drops of anthracite (charbonneux) blood can be kept for weeks and months without losing their first virulence.

Is it the same as regards the virus of pleuro-pneumonia?

This we have endeavored to decide; but during the short space of time which our researches have lasted we have not been able to thoroughly sift the question, and many unknown facts remain to be elucidated. Besides, animated as we were by the desire to arrive at a practical solution, accessible to everybody, we have endeavored to render it as simple as possible.

We therefore collected, in a pure state, some samples of a subcutaneous lympth in slender tubes which had previously been sterilized. Some of these tubes were placed in an ice-chest, while the others remained exposed to the ordinary temperature of the laboratory.

Our experiments were made with lymph seventeen days old, and with lymph preserved during one month—

(*a*) With the seventeen days' old lymph kept at the ordinary temperature of the laboratory, we inocnlated two calves of about one year old behind the shoulder. One of them died with an enormous œdema, and the post-mortem examination made in the presence of Messrs. Gordon and Bruce showed that there was enough lymph to inoculaie from fifteen hundred to two thousand head of cattle. The other developed just as large an œdema, but after a long illness ended by recovering.

(*b*) With lymph kept during a month seven calves were inoculated behind the shoulder. Only one of these calves died with the ordinary large œdema. This one was inoculated with lymph preserved at the ordinary temperature. Two others had an œdema of considerable size, (these were inoculated with lymph kept in an ice-chest) but survived. Four showed neither œdema nor rise of temperature. Although the doses of virus injected were comparatively weak (two or three drops), it appears from this last experiment that the virus has lost a large portion of its virulence at the end of a month. After fifteen or twenty days, on the contrary, it would appear to retain its primitive virulence.

It now remains for us to show what practical benefits can be derived from the knowledge of the facts which we have just set forth.

Let us suppose that in Brisbane, or in any other central place, a station is established where every fortnight two or three calves are inoculated either with virus collected from a case of spontaneous pleuro-pneumonia, which must be done from time to time to rejuvenate the virus, or with subcutaneous virus taken from calves previously inoculated. Enough tubes of virus could be collected in a pure state to provide for all demands; these tubes it will be possible to send by post. With the virus thus obtained stock-owners can sacrifice two or three calves, which would furnish the amount of lymph necessary for inoculations. Instead of having recourse to a central station, stock-owners could, if they preferred, collect a few tubes of virus from an animal killed on their runs, and send it to a distant station where no case of pleuro-pneumonia existed, but where it was desirous to inoculate a mob before making them travel. All that is required is a few sterilized tubes, a spirit lamp, and a small forceps.

To enable every one to proceed with certainty, we believe a few indications as to the means of collecting virus and afterwards inoculating it would be useful.

If it is a case of spontaneous pleuro-pneumonia, the diseased lung should be uncovered, care being taken not to injure it with the instruments or with the hands, and the surface of the lung on a level with the point where it is desired to make the collection of virus should be burnt with a rod of heated glass. Having broken the point of a slender tube, the latter should be passed in the flame so as to destroy any germs which exist on the outside surface of that part of the tube which is to penetrate the lung. When the tube has been pressed in, some drops of the lymph should be inhaled by slightly sucking, and the slender end of the tube should then be closed with the lamp. The virus keeps equally well if the two extremities of the tube are sealed at the flame, and under these conditions it is much easier to carry. If it is desired to collect the lymph, which is often contained in large quantities in the pleura, it will be necessary to first expose the ribs, being very careful not to open the thoracic cavity. The side on which the pleuritic discharge is situated can be ascertained by sounding (percussion). The liquid is often contained in partitions formed of false membranes, but is always sure to be found after a few trials by sinking tubes in different parts of the chest. If tubes with large receivers are available it will sometimes be possible to collect several pints of virus, and to make use of it, after a lapse of a fortnight or three weeks, for inoculations in the tail.

As regards subcutaneous virus, it will be necessary first of all to break, by a smart stroke delivered with an ordinary hammer, for example, the meshes of the connective tissues in which the lymph is imprisoned. This simple act (*tour de main*) facilitates in a singular manner the collection of the virus, and has, moreover, the advantage of mixing the lymph with solid particules. Before sinking in the slender end of the tube, the hair and skin must be deeply burnt in order to destroy the germs existing on the surface.

The virus which it is desired to keep should be placed in the dark, and, above all things, exposing it to the direct rays of the sun should be avoided.

The animals which are destinated to furnish the virus should be inoculated in the neck or behind the shoulder, behind the shoulder in preference. It will be sufficient to break the point of the tube and sink it under the skin by a slight twisting movement—the point would break if it were attempted to press it straight in. It would perhaps be preferable to use a hypodermic syringe, which would make the operation easier, more especially if the animals are difficult to keep still.

When lymph is being collected from an animal which has just succumbed, or which has been slaughtered, it is transparent and limpid, and only appears to contain a few very small granules. But after a short time the fibrine coagulates, and a cloud composed of the fibrine forms rapidly and unites all the solid particles contained in the liquid together. We believe it necessary to inoculate some of this solid matter, which appears to contain active parts of the virus.

About a cubic centimeter (sixteen drops) of virus should be inoculated.

The death of the animals inoculated should be awaited, but they may be slaughtered in full evolution of the disease when the œdema appears sufficiently large for practical requirements.

The body resting on the healthy side, a wide incision should be made extending from the haunch to the shoulder, and the skin should then be raised in such a way as to form a pocket, in which the liquid will collect naturally and where it can be easily taken. As the lymph is contained in the meshes of the connective tissue it will be necessary to lacerate this tissue with a knife and to expel the liquid therefrom with the hands. Of course, the greatest precautions as to cleanliness are necessary.

In compliance with the desire of the Queensland Government we have, while carrying out the above experiments, endeavored to isolate the pleuro-pneumonia microbe — if such a thing exists. In no instance have we been able to obtain a "culture" by trying in various mediums lymph collected either from the subcutaneous œdema or from the pleuritic serosity — which, however, at least proved the purity of the lymph which we employed. In four cases, by placing some blood taken direct from the heart in some ordinary beef broth, we were able to cultivate a microbe, which, when inoculated into two heifers, produced each time a swelling which remained localized. We have not yet been able to satisfy ourselves as to the specification of this swelling.

Before leaving the colony, in which we have received such a friendly welcome, we desire to thank the members of the board, who have always given us such obliging assistance. We also wish to thank Mr. Henry W. Beck for the vigilant care he has taken of the animals under experiment.

DR. GERMONT.
AD. LOIR.

LANDS AND LAND LAWS OF HONDURAS.

REPORT BY CONSUL HERRING, OF TEGUCIGALPA.

So many questions have been written to this consulate by Americans concerning the lands and land laws of Honduras that I have felt certain such a translation as the inclosed would be highly valued by all such as contemplate investment in this country. That it is a plain, simple answer by the Government itself to many such questions is a sufficient reason for its being sent from this consulate.

THE NEW UNIT OF MEASURE.

A very noteworthy amendment of this law is that it establishes a unit of measure, exact, uniform, and unmistakable, in place of the ancient and uncertain "caballeria," formerly the unit of measure, and extremely indefinite in its meaning. It has not only various meanings separate or not relating to land, but, as regards land, its meaning is not the same in Honduras as in some other countries. This indefiniteness of meaning was continually causing mistakes. Making inquiries as to what was a caballeria, the answers received did not harmonize, and not knowing or thinking that there was a conventional caballeria in Honduras, I naturally went to the standard Spanish-English dictionary to ascertain the meaning of caballeria, and found it defined therein as "a tract of land of about 33⅓ acres, United States measure," and I reported to the Department accordingly that "a caballeria was equal to 33⅓ acres," while in Honduras it was really about three times as much, or 112 acres. To make impossible such mistakes was one of the

much needed reforms accomplished by the new law, which adopts as a unit of measure in place of the indefinite "caballeria" the definite "manzana," which is everywhere a square measure of 100 by 100 yards (*varas castellanas*). Except in this necessary explanation it is useless to comment on the law, as it is given here to speak for itself.

GOVERNMENT LANDS, TAXES, ETC.

There is no measurement or record showing the quantity of Government land, but the acres may yet be counted by the millions. The supreme Government has a monopoly on the sale of tobacco and whisky, but there is no tax on any lands or their products, except sometimes and in some places there is a road tax or other local charge insignificant in amount.

AGRICULTURE.

On this land can be grown almost all the agricultural products produced in the United States. Sugar-cane is indigenous and grows for ten years or more without replanting, and two crops a year can be taken from the same soil. Cotton will grow as high as 20 feet. Honduras coffee is, perhaps, without a superior in the world. And it is claimed that rice grown here sells for better prices than are paid for that grown in the Southern States. As explained in a former report, agriculture is centuries behind the progress of the age. But this is not chargeable to any natural conditions of climate or soil, but to the heretofore unsettled condition of the country. It has not only been sparsely settled, but, as freely admitted by the Government and people, the past political condition of the country has been most unfavorable to agriculture. Farming, perhaps above all other pursuits, requires uninterrupted peace, not only because timid capital fears wars, but because the laborers necessary must be absolutely exempt from molestation or even the fear of it through conscriptions or otherwise. For instance, mining may be well suspended on account of war, but the care of growing crops never. Unfortunately, the long sought and hard won independence secured by this people in the great revolution of 1821 did not bring with it the blessing of peace, but the country has been torn and rent with civil dissensions and wars down to within a few years, when the helm of government was put in the strong hands of the present chief executive, whose firm and commanding influence seems to have succeeded in bringing peace to his long distracted country; and now there is going on the greatest revolution since that of 1821, and far better than that, because it is without bloodshed and brings in its train the blessing of peace and the sunshine of prosperity. This second great conquest of Honduras goes on, not by the power of the sword, as in the old days, but by the quiet, gentle and persuasive means of modern civilization. This peaceful revolution has already swept away the old prejudices against foreigners (so obstructive to Honduras progress) not only from the minds and hearts of the people, but also from their statute books; and now the laws are most liberal and the people exceedingly kind to foreigners, espec-

ially to Americans, and these are coming in twos and in tens, as they will afterwards come in twenties and in thirties, to help make Honduras what it ought to be—a most delightful country.

PRODUCTS.

To dwell at length in any one report on the products of these lands would require too much space, and especially in this report with its accompanying inclosure; and therefore only a brief mention of such products will be attempted at present.

Precious woods. — There are rose-wood, iron-wood, sandal-wood, satin-wood, silk-cotton or ceiba, mahogany, cedar, pine, guanacaste, cortez, black and white laurel, ebony, walnut, locust, and many others, some of which have not yet been introduced into the United States. Of dye-woods there are annatto, Brazil, fustic, indigo, sacate-tinta, etc.

Mahogany cutting at one time was very profitable, but not so now, as most of the valuable trees near the coast, where transportation was cheap and easy, have been exhausted. When transportation facilities are furnished to the interior and to some places near the coast where transportation has been heretofore too difficult, this once profitable business alone, or in connection with other fine, hard-grained woods, will be revived; and no doubt many of the foregoing natural products, but few of which have been heretofore worked, will then become sources of rich profits.

Fruits. — Bananas, plantains, aquacates, zaphotes, cocoa-nuts, pine-apples, oranges, lemons, limes, and blackberries abound in rich profusion and of the finest quality. There is a great variety of indigenous fruits, but a scarcity of peaches, pears, cherries, olives, figs, dates, grapes, and strawberries, though there appears to be nothing in the climate or soil or natural conditions of the country to prevent the successful culture of these. Of all these the most important are the banana and plantain, which have grown within the last ten years to be the chief export product of the country, amounting now to an annual value of about $1,000,000. Cocoa-nuts, pine-apples, oranges, and lemons are the next of the fruits in importance and in the order named.

Medicinal and fibrous plants. — Of the first there are quinia, ipecac, sarsaparilla, rhubarb, vanilla, and a great number of herbs, barks, gums, and roots unknown to materia medica. Of the second are the stalks of the banana and plantain, leaves of the pine-apple, pita, pinquin, hennequin, mescal, etc.

Minerals. — Of these worthy of mention are gold and silver, platinum, copper, tin, lead, and iron. But of these only gold and silver are yet worked to any considerable extent, though there is a mine at Erandique that produces some valuable opals.

There is no way of ascertaining the exact value of the gold and silver product, there being no tax or other Government claim upon it. This product is known to be rapidly increasing, and will probably amount to $2,000,000 next year.

VALUE OF PRODUCTS PER ACRE.

From different publications are taken the following estimates of the gross annual earnings per acre of some of these lands under judicious management: In bananas and plantains, from $75 to $300; in cocoa-nuts, from $60 to $300; in pine-apples, $240 to $625; in sarsaparilla, from $575 to $700; in india-rubber trees for twenty-five years after first ten years, from $100 to $200. But these figures are intended to show the capacity of the lands under the best culture. The profits will depend more upon the capacity of the man, that is, upon his management and economy.

D. W. HERRING,
Consul.

UNITED STATES CONSULATE,
Tegucigalpa, December 27, 1888.

LAND LAWS OF HONDURAS.

Translated from the Spanish by W. Everall, by whose permission this copy was transmitted for publication to the Department by Consul Herring, of Tegucigalpa.

The president of the Republic of Honduras—considering that the unappropriated lands of the Republic constitute a source of national wealth, and that the increase and development of agriculture call for the promulgation of an agrarian law which shall guaranty the property and possession of lands, and likewise the correctness and formality of measurements, divisions, setting of boundaries, and other surveying operations connected with the acquisition and peaceful enjoyment of landed property—making use of the faculties conferred upon him by the forty-eighth article of the constitution and the law issued on the 28th of December last, decrees the following ordinances concerning lands:

CHAPTER I.

DIVISION OF LANDS.

ARTICLE 1. The division of land for the purposes of this law shall be into three classes:

(1) Unappropriated lands, which are those that have not been made over to any private individual, towns, or corporate bodies, and which are owned by the State, although it may receive no revenue from the pastures, timber, and other natural products of the land.

(2) Those which are granted to towns as town lands for use of the inhabitants in common, and over which only a right of possession can be acquired.

(3) Lands of private ownership, amongst which must also be comprised those belonging to corporate bodies or definite associations.

ART. 2. The ownership of the possessors of land is guarantied and protected, whatever may be the time of possession, provided it has been in good faith and with just and lawful title, and in default of document any legal means of proof of the rights of the interested parties is to be so reputed.

ART. 3. The unappropriated lands of the Republic can not be acquired by prescription, except in the case of titles having been given by the Government, without all the conditions of the law having been complied with and their having been in possession of the party acquiring them during a period of ten years.

CHAPTER II.

LAND GRANTS TO TOWNS AND PRIVATE INDIVIDUALS.

ART. 4. The Government, acting in harmony with the present development of agriculture, possesses the power of making grants of land to towns and private individuals, in accordance with the existing laws and ordinances on the subject, or with those that may hereafter be enacted.

ART. 5. To every town which is the capital of a municipal district shall be given gratis, and as town lands, 2 square leagues of land, which must be denounced on the unappropriated lands nearest to the town soliciting them. Town lands of small villages, governed by assistant alcaldes, shall not exceed 1 square league; and it is a necessary condition for making said grant that the village concerned in the matter possess a municipal hall, an elementary school-house, and a population of not less than 200 inhabitants.

ART. 6. The towns spoken of in the preceding article shall solicit in writing their town lands, from the administrator of revenue of the department to which they belong, through their legal representatives, who in villages are the respective assistant alcaldes. The petition must contain not only a statement of the circumstances, which according to law are requisite to enable towns and villages to hold town lands, but also of the especial condition of the land solicited. The administrator of the revenue shall make a summary investigation, by means of witnesses, in order to demonstrate the correctness of the statements set forth in the petition; the fact of the lands solicited being national property; and whether the petitioners are without the whole or part of the town lands to which they have a right. These points being satisfactorily proved, the administrator shall declare, in an official paper, the national ownership of the land and the extent of town lands to which the petitioning village has the right, and shall commission a surveyor or expert to measure off the land in accordance with this law.

ART. 7. On the conclusion of his operations the surveyor shall hand back the documents to the administrator of the revenue, and the latter shall present them to the Government through the secretary of the treasury.

ART. 8. After the proceedings have been revised by a special fiscal officer, in the manner hereafter stated, and the whole being approved by the Government, the title shall be made out in favor of those interested without further expense than that of the corresponding stamped paper, and 2 cents, which they shall pay to the public treasury for every "manzana" (100 varas square) called for by the survey, a certificate of the respective payment being annexed to the documents.

ART. 9. Town lands of towns and villages are granted for the use of inhabitants in common; their management and distribution belong in towns to municipalities, and in villages to the assistant alcaldes.

ART. 10. Every grantee of land acquires its possession from the moment when, by order of the competent authority, it is measured for him by the surveyor commissioned to that effect. He can only make use of the land after obtaining titles, which the Government shall cause to be made out, with the legal formalities, and without further expense than that of the stamped paper corresponding to the value of the grant.

CHAPTER III.

SALE OF UNAPPROPRIATED LANDS AND PRICES.

ART. 11. All land, which is not the exclusive property of any individual, person, or community whatsoever, must be reputed unappropriated and the property of the State. Individuals, societies, or towns that wish to acquire the ownership of lands of this kind shall present themselves to the administrator of the revenue of the department to which the land belongs, denouncing it as unappropriated, and describing it by its best known names and recognized boundaries, stating its approximate area and the quality of soil, that is, whether it is pasture

land fit for cattle breeding, or land suited for agriculture. The officer of the revenue shall admit the denouncement and without loss of time shall either himself or by means of the collector of revenue of the same locality examine three fit witnesses as to the following points:

(1) Whether the land denounced as unappropriated is actually or ever has been in possession of any individual or town, and the uses made of it or intended to be made of it.

(2) If they know of any one having a right of ownership or possession of said land, or if it is recognized as really unappropriated and consequently the property of the nation.

(3) The witnesses must also furnish all the information in their power as to the knowledge they have of the locality, in respect to the nature of the soil, its situation as regards navigable rivers, railways, cart roads, and important towns.

ART. 12. After the conclusion of the examination, the administrator of the revenue shall formally declare whether the land denounced is or is not property of the State; and in this last case he shall proceed to denominate a surveyor or expert to undertake the operations of measurement, and shall hand to him the respective documents so that he may act according to the requirement and formalities set forth in a special chapter of this law.

ART. 13. On the termination of his operations the surveyor shall hand back the documents to the administrator of the revenue, who, on receipt of them, shall proceed to value the land in question, taking as a basis for this measure the value set upon lands by law, and the report of the surveyor as to its nature, all of which shall be clearly stated in the proceedings.

ART. 14. The administrator shall thereupon decree the sale of the land in public auction, fixing the day and hour for this to take place. The notice of the sale shall be given in a newspaper of the department in three consecutive numbers, or in default thereof in any other newspaper of the Republic having a circulation within the jurisdiction where the land is situated; and it shall express the conditions of the lands; its area in manzanas of 10,000 square yards (varas); its value or price and the date and hour fixed for the sale.

ART. 15. On the arrival of the day and hour fixed for the auction, the administrator shall sell to the highest bidder, giving the preference on equal terms to the denouncer. No bid shall be admitted unless accompanied by a sufficient security or cash or guaranty for the amount of the bid. The denouncer is excepted from this condition. The security must be to the satisfaction of the administrator, and the bondsman must make himself jointly responsible as debtor for the amount.

ART. 16. If in the measured land there should be a cultivated piece of arable land, grass piece, etc., formally established, and its possessor should wish to acquire as property the area he occupies and as much more, he has the right to purchase it, whatever may be the extension, at the rate of the valuation set upon it by the administrator, according to the quality of the land occupied, and without overbidding in price being allowed. Of this occurrence separate proceedings shall be drawn up, in which shall be set forth the measures that conduce to guaranty the rights of the purchaser, the measurement that comprises the land and so much more, the ground plot, and the report of the surveyor, all at the cost of the interested party; of all of which the respective title shall be given to him with the formalities and requisites of this law.

ART. 17. Of every public sale of national lands a deed shall be drawn up in which shall be stated with clearness what took place in the proceedings, the intrinsic value of the land and its increase through counter-biddings, expressing the total amount of the sale, and the person or persons in whose favor it is made. The purchasers must bind themselves in a formal and definite manner to the payment of the amount accepted under the legal conditions and with responsibility incurred by morose debtors to the public treasury. The proceedings of the sale (auction) shall be signed by the interested parties, the administrator of the revenue, and a notary public, or two assistants who shall be witnesses to the deed.

ART. 18. The sale being concluded in the manner expressed in the preceding article, the functionary who takes cognizance of the proceedings shall remit them to the minister of finance for the measures having for their object the revision and approval of the higher authorities.

ART. 19. The Government shall nominate a special fiscal, who must under all circumstances be a surveyor of capacity and probity, to whom the proceedings shall be sent for revision. The decision given by him shall embrace the legal and scientific points raised in the proceedings.

ART. 20. If, from the decision of the fiscal, it should result that everything has been properly done without material faults or defects, whether in the operations of the survey or in other measures, and the Government accepts the opinion of the fiscal, the proceedings shall be forwarded to the office of the treasury where the payment has to be made. The certificate of the entry of payment shall be annexed to the proceedings, and after note has been taken in the comptroller-general's office, and in the office of the director-general of the revenue, the Government shall legalize them. The legalization or testimony of the proceedings constitutes the deed of ownership.

ART 21. It is to be understood that from the moment when an auction sale of national land takes place it is adjudicated to the purchaser, but the transfer of proprietorship *dominio util* he can acquire only by means of the inscription of the title in the registry office of deeds, in accordance with the disposition of article 763 of the Civil Code.

ART. 22. Whenever it should be shown by the decision of the fiscal revisor that survey of a piece of land or of a remeasurement for Government legalization is defective, or that there are similar deficiencies in the administrative proceedings, and the Government adopts said decision, the error shall be ordered to be rectified at the cost of whoever has committed it. The rectified proceedings shall be remitted a second time to the Government for its approbation, and the further measures.

ART. 23. Every denouncement of national lands shall be dispatched without any delay; and if after three months have passed without sale taking place and the interested party does not press the regular dispatch of the proceedings, he shall be held to desist from the denouncement, and the administrator may, under those circumstances, admit a new solicitation for the land. The proceedings shall then be continued in the state in which they actually are on account of the new petitioner, to whom shall be transferred all the rights of the former one.

ART. 24. If, on making the investigation for the purpose of proving whether an unappropriated land is national property, there should arise the case of the witnesses being in disagreement with some individual who alleges a right to said land, the disagreement shall be settled by the arbitration hereafter spoken of, a hearing being given to the fiscal of the treasury; and administrative dispatch of the denouncement must be suspended until the definite sentence of the arbitrators is given. But if the party alleging the non-nationality of the unappropriated land in question does not make use of his rights within a period not exceeding one month, the administrator of the revenue shall, in this case *ex officio*, make a formal declaration that said land is the property of the State, and shall proceed to the further measures, on the petition of the denouncer.

ART. 25. In the same manner, if, during the operations of the survey, an opposition should arise from any of the neighbors of the unappropriated land that is being measured, and according to the data attainable by the commissioner the pretensions of said neighbor can be prejudicial to the public treasury, the surveyor shall proceed in accordance with what is set forth in article 51.

ART. 26. For the purposes of this law, so far as it relates to the grant and sale of national land, the following shall be the unit of measure: The square yard (vara) and the manzana. The latter is equivalent to a square measuring on each side 100 yards (varas castellanas). The agrarian league, which, to the number of one or two squares, must be measured off as town lands for the towns of the Republic, is a perfect square, the sides of which measure 5,000 square yards (varas castellanas).

ART. 27. The geometrical map of all land which is surveyed or resurveyed for the purposes of this law shall be estimated in manzana and square yards, and the calculation must be made by every fiscal revisor who, for any cause, has to examine and decide upon measurements or

remeasurements executed prior to the present law. The manzana is the unit that shall regulate all taxes and charges on landed property. The minimum price of lands shall be graduated according to the following classes:

(1) Lands suitable for pasture, whether covered with useful timber or not, shall be valued at the price of 50 cents per manzana.

(2) Fertile lands, suitable for agriculture, not only on account of the facility with which they may be irrigated by streams running through them, but also by reason of the natural conditions of the soil, whether or not well wooded, shall be valued at $1 per manzana.

(3) When the area measured contains the two qualities of land mentioned the surveyor, in his report, shall state the number of manzanas of each kind in his judgment, or their proportion one to the other, so that the treasury official who has to value the land may have a basis on which to form his estimate.

(4) Lands situated within a league from the banks of navigable rivers, or of lakes connected with them, shall, as a general rule, be valued at $1.50 per manzana. But if such lands excel through other natural or commercial advantages, their value shall then be $2 per manzana. This shall be entirely at the discretion of the administrator, taking into consideration the data acquired in the proceedings.

ART. 28. The total value of the unappropriated lands which it is intended to dispose of shall be fixed by the administrator of the revenue, keeping in view what has already been stated.

ART. 29. The Government may prohibit the sale of national land to a distance of 2 leagues in a straight line from the shore of both seas, as also the disposal of islands or quays (*cayos*). The Government may grant such lands on lease and permit their improvement and cultivation, in accordance with the laws and ordinances promulgated for the encouragement of agriculture and other industries.

CHAPTER IV.

RESURVEY OF LANDS AND RENEWAL OF TITLES.

ART. 30. Whenever a private proprietor, or a town, or any association, on account of loss of title, or any other just cause, should wish to measure their land, they can do so on applying to the administration of the revenue of the respective department, soliciting permission for the resurvey. This shall be granted at once on presentation of the title of the lands or of the documents that prove their right. Proceedings shall be commenced to the effect, and a surveyor or expert shall be commissioned by the administrative authority to carry out the necessary operations on the old boundaries, verified by the unimpeachable testimony of two fit witnesses, who shall give their declaration in presence of the agrarian commissioner, and they shall accompany him during the whole of his operations, so as to point out the boundaries and corner posts of the land under measurement.

ART. 31. If there should result from the legitimate operations of a resurvey that there are differences either in excess or defect of the land, in neither case shall the proprietor need to make a fresh transaction with the public treasury.

ART. 32. It is the obligation of every proprietor to mark the boundaries of his land with stone or masonry pillars or other permanent signs, and for this purpose he shall have it measured and marked off by a surveyor or expert, proceeding in the form that is set forth in another chapter of this law. The same is incumbent on towns, so that they may secure the town and other lands that lawfully belong to them, and be able to defend them perfectly from all trespass attempted, either in good or bad faith.

ART. 33. On the termination of the operations of the resurvey of land the surveyor shall return the proceedings to the administrator of the revenue from whom he received them, who shall remit them to the Government for the revision and approbation of the fiscal. The title of the resurvey shall be delivered with the same formalities as those provided in the case of the ordinary measurements of unappropriated lands.

ART. 34. In every remeasurement 2 cents shall be charged as fiscal dues for every manzana that results. This fee shall be paid to the public treasury, after the proceedings are approved, for the certificate of payment to be annexed to the title.

ART. 35. The titles of landed property can be renewed by applying to the Government, which shall order the legalized copy of the respective deed that should be in the general archives of the Republic to be made out. In the new deed there shall be copied the petition requesting it and the supreme decree granting the renewal of the title, which shall be extended on the certificate of the payment of 2 cents for every manzana of those expressed in the proceedings to be legalized being presented. The interested party must also pay the expenses caused by stamped paper, writings, and the copy of the geometrical map, which must be annexed to the deed.

ART. 36. When the person desiring the renewal of a title is owner of the property by bill of sale from one possessor to another or in virtue of any legal documentary proof he shall adjoin the documents on which he relies to his petition; and the Government, taking them into consideration, shall admit them, in so far as the law permits, and give orders that on the respective title being extended in favor of the petitioner said documents shall be copied faithfully and in full.

CHAPTER V.

MEASUREMENTS, DEMARKATIONS, SETTING OF BOUNDARIES, AND PARTITIONS.

ART. 37. A surveyor intrusted with the measurement of a piece of land shall, after accepting the commission, receive the papers, and shall insert on them the day for the commencement of operations.

ART. 38. The person commissioned for any survey, resurvey, etc., possesses the authority necessary for acting in the sense of his commission without having to subject his actions to the intervention of the local authorities of the place to which the land belongs. The jurisdiction of the surveyor is in this case of an administrative character, and as agent of the revenue department he should be assisted in the discharge of his duties whenever, with just cause, he calls on the local authorities to this effect.

ART. 39. All operations executed under the law must be authenticated by a notary public or by two assisting witnesses, able to read and write, nominated and sworn in by the surveyor, who shall state this fact on the proceedings. He shall also nominate a teller and a chainbearer, who shall keep an exact account of the yards (varas) they measure on each stretch for the judge of the survey to take note of in due time.

ART. 40. The first operation of the agrarian commissioner must be the inspection of the land he is about to survey, and has for its object—

(1) To ascertain what are actually, or are going to be, the boundaries.

(2) To see whether or not they are passable, and if they are susceptible of material measurement or not.

(3) To inform himself whether the land adjoins private or national property, and in the former case if the interested parties are in agreement as to their respective boundaries, or he has met with doubts or pretensions regarding them.

(4) To endeavor, with impartiality and earnestness, to have all disagreements that spring up amicably and fairly arranged by the parties themselves.

ART. 41. After the boundaries that the land is to have are decided upon, and the interested parties are in accord regarding them, the measurement shall be proceeded with from boundary post to boundary post, taking the directions and distances in a straight line with a chain or metallic tape-line of 25 yards (varas castellanas), of 835 millimeters to the yard, the commissioner taking care to avoid all cause of error and to instruct his assistants as to the convenient placing of sights and the carrying the chain accurately over the corresponding line.

ART. 42. At all points where there is a change in the direction of the boundaries and no natural signs exist temporary marks shall be made by heaps of stones, so that they may not be lost sight of while the formal demarkation of the land is being made.

ART. 43. In the measure of distances care shall be taken to stretch the chain in a straight line, so as to avoid the undulations of the land, or to follow the declivities, in which case the angles of elevation and depression shall be taken and reduced to a level.

ART. 44. The variations of the compass shall be ascertained before commencing the survey, the most appropriate spot for making the observation necessary for ascertaining it being selected, and in the proceedings the measures adopted shall be stated.

ART. 45. When lands adjoining others owned by or in possession of private individuals are to be measured, the inspection and measurement of the boundaries must be executed with the knowledge and in presence of the interested parties, and with inspection of their respective documents.

ART. 46. For the effects of the preceding article the judge of the measurement shall officially summon the proprietors or occupiers of the lands with which he will have to touch, appointing a period of three days, adding one more for every 5 leagues of distance, so that during that time they may present themselves, either personally or by representative, with their titles, in the place where their presence is required.

ART. 47. A note of these summons shall be entered on the proceedings, expressing the date and place of their issue, the place of residence of the persons to whom they are addressed, and the day fixed for the commencement of the operations at which they should be present.

ART. 48. If, notwithstanding the summons, any of the adjoining proprietors should not appear at his boundary, the surveyor shall proceed with the operations he has to perform thereon, endeavoring for their security to obtain data from other neighbors, or from whomsoever can furnish them, for greater exactitude.

ART. 49. When the line to be measured is defined by a river, ravine, fence, or ditch, which from its nature admits of no confusion, the neighboring proprietor or possessor may excuse himself from attending, stating in his answer to the official summons in what his boundary consists. In other cases, where the boundaries are not well defined, it is incumbent on proprietors or possessors to present themselves to point them out, in order that their lawful rights may be respected.

ART. 50. On measuring the recognized boundary of a piece of property it shall be seen whether it is in accordance with the titles or documents from which it proceeds, not so as to alter it in any manner, but with the object that, in the direction and extension it actually has, it may serve as a boundary to the land to be measured.

ART. 51. When the proprietor or possessor of the land adjoining the piece being measured is not in accord as to the boundary that the party interested in the survey wishes to establish, the surveyor shall use all effort and impartiality to bring about an equitable arrangement between the parties. If he should succeed, after making an entry to that effect on the proceedings, he shall carry out in conformity therewith the operations necessary for the opening of the line or lines agreed upon. In the contrary case, he shall merely take exact data as to the extension, direction, and other remarkable signs of the line that each party lays claim to, so that therewith, and with whatever else it may be well to keep in view, the work may be decided by the arbitration hereafter to be spoken of, without on that account the further operations of the measurement being suspended.

ART. 52. Should the measurement to be made be of unappropriated land adjoining others of private ownership or legally occupied, the survey shall be carried out, following the recognized boundaries of the owned or occupied lands adjoining.

ART. 53. Should the denounced land be surrounded by others unappropriated, the survey shall be executed in accordance with the terms of the denouncement, endeavoring to follow the natural boundaries of the land.

ART. 54. When lands without defined boundaries have to be measured, so far as topographical circumstances permit, a square or rectangular form shall be given them, the sides of which shall run from east to west and from north to south, on the true meridian.

ART. 55. The surveyor shall carry a field-book, in which he shall note down all operations, the direction and extension of every straight line measured, the accessory measures

adopted to obtain the direction and extension of such as are inaccessible, and all the signs met with on the land which demark the boundaries and corner posts.

ART. 56. With this book before him, and in accordance with the particulars contained therein, and on the corresponding stamped paper the proceedings stating what has taken place every day shall be written out with clearness and precision, both as regards the inspection of the land and the measurement of the boundaries, and also what is expressed concerning them in the documents of the adjoining neighbors, should there be any, and everything else that has been done or may have occurred.

ART. 57. These proceedings shall be signed by the surveyor, by the party interested in the measurement, by the neighbors adjoining whose boundaries are concerned, and by a notary or the assisting witnesses.

ART. 58. As soon as the corresponding calculations for the reduction of the lines that could not be actually measured and for fixing the area are concluded a statement shall be entered on the proceedings of the result of said operations, declaring the steps taken to obtain them.

ART. 59. Every survey of land must be accompanied by a map, which shall show, in proportional scale with refererence to the true meridian, the perimeter of the horizontal plan and the places or objects that help to a fuller understanding of the position of the boundaries and corner posts, annotating the names of these, the area in manzanas and square yards (varas), the adjoining possessions, the variation of the compass, the scale employed, and the date.

ART. 60. There shall also accompany it a record or recapitulation of the whole measurement, in which may be seen at once the direction and length of each line of the perimeter and the magnitude of the angles they form one with another.

ART. 61. Of all that has been done the surveyor shall draw up proceedings, of which he shall give account to the authority from whom his commission emanated, informing him if the land measured was unappropriated, as to the nature of the land and other particulars mentioned in article 27 of this law, and giving the number of the manzanas it contains of the precise kinds to serve as a basis for the valuation. He shall also make a report as to any disputes that may have occurred, or the way and term for arranging them by means of arbitration should they have been left open. Under other circumstances the report shall be confined to the matters relating to the object of the commission.

ART. 62. After a sale by auction of unappropriated lands has been effected, or a resurvey of those of private ownership, which the Government has to approve of for granting titles, the proceedings shall be revised by the special fiscal, who shall be nominated for that purpose by supreme decree. The fiscal revision of such operations has for its object to observe—

(1) If, in carrying out the operations of measurement or remeasurement, all the legal formalities have been complied with.

(2) If each and every operation has been performed in accordance with the principles of geodesy.

(3) If the calculations have been made in consonance with the data obtained on the land, and if the results are correct.

(4) If the map agrees with the data of the survey and of the record referred to in article 60, and if it contains the remarks called for by article 59.

ART. 63. If omissions or errors that can easily be filled up or rectified are met with, the revisor shall do what is necessary, either himself or in agreement with the measuring surveyor; but if this is not possible, the Government, in view of the report made by the revisor of measurement or remeasurement, shall decide what is best to be done, and in that case regard shall be had to the prescriptions of article 22.

ART. 64. The maximum error of measurement that can be permitted in the survey of broken land, and of which the perimeter has more than forty sides, is 2 per cent. on the whole extension; having only twenty sides, 1½ per cent. Should the error exceed those limits, it will be necessary to return to the land to repeat the operations.

ART. 65. When a survey of unappropriated lands, or a remeasurement of private ones, has met with a favorable decision from the revisor, and it should appear beyond dispute, not

only that it was executed without any opposition, but also that the interested parties and the adjoining neighbors, if there are any, are satisfied with what has been done, the boundaries indicated shall be considered settled, and shall at once be marked in a formal manner by pillars of masonry, or in some other permanent and secure way, if no natural landmarks exist. This shall be done also on every property and lawful possession of the kind mentioned in article 32, with permission from the competent authority and in presence of the parties interested, by the same surveyor who measured the land or by another commissioned for the purpose. All that is done with this object shall be stated in proceedings to be drawn up, with the formalities prescribed in articles 56 and 57. When having to do with measurements made prior to this law, a deed shall be made out of all the proceedings of the demarkation, and the originals shall be annexed to the titles of the property marked out, with a certificate from the administrator of the revenue, who must intervene for the proper legalization of the different steps.

ART. 66. Surveyors in the exercise of their duties will have the same criminal and civil responsibility that attaches to other public functionaries; and if—knowingly, through want of skill, and in contravention of what is prescribed in this law so far as relates to his attributions—a surveyor should incorporate land belonging to a private individual, or lawfully occupied, or should occasion any other injury, he must remedy it at once, making the necessary rectification for the error to be remedied.

ART. 67. If the incorporation or damage treated of in the preceding article arise through the injured proprietor or occupier not having furnished at the proper time the necessary and explanatory data to enable the operations to be fairly performed, the reparation shall be made at the expense of said proprietor or occupier.

ART. 68. In the operation of measurement, remeasurement, running boundary lines, demarkation and division practiced by surveyors in the capacity of experts nominated by judicial or administrative authority, or in those intrusted to them by private individuals, they shall proceed in accordance with the nature and object of the operation, adhering to the spirit of the prescriptions of the present law.

ART. 69. Disputes as to doubtful boundaries spoken of in article 51, and likewise those mentioned in articles 24 and 25, that arise between two or more proprietors, whether private individuals, towns, or communities, shall be settled in future by arbitration only; and in the same manner controversies regarding partitions of land made by a surveyor commissioned for the purpose, and which the contending parties do not wish to accept or to recognize as valid, shall also be settled.

ART. 70. The contending parties have the right to nominate the arbitrators in presence of the administrator who authorized the survey or resurvey of a piece of land, and in other cases in presence of the respective judge. Those nominated shall have the proper authority of arbitrators.

ART. 71. In an arbitration suit the contending parties may appear personally or by representative; and the fees of arbitrators and representatives, as well as all other expenses to which these special proceedings may give rise, shall be at the charge of the contending parties.

ART. 72. Each party shall nominate an arbitrator, and any citizen in the enjoyment of his rights may be such; and the arbitrators thus nominated shall agree upon a third one, who shall decide in case of non-accord, without the obligation of this third party being subjected to the approbation of the contending parties.

ART. 73. Whatever questions arise, or any already existing on the publication of this law, must be submitted to arbitration. If either of the parties should fail to nominate an arbitrator within a month of being called upon to do so by the administrator or judge at the solicitation of his opponent, said functionary may compel him or may nominate an arbitrator *ex-officio* if necessary. The arbitrator shall be nominated by the administrator or judge, three days after its being declared in writing that the two first can not come to an agreement as to whom to elect.

ART. 74. On the decision being given, in view of the antecedents, the court of arbitrators shall notify the parties; and at the request of either of them shall give order of execution,

remitting it, with the proceeding that caused it, to the administrator or judge for its due enforcement. No appeal can be had from the sentence of the arbitrators.

ART. 75. The proceedings in arbitration may last for a period of thirty days, which can not be prorogued. During this period the parties must present the lawful proofs which they are able to obtain, and these must be confined simply to matters relating to the dispute.

ART. 76. Each of the arbitrators shall receive for his fee the amount assigned by the administrator or judge; the arbitrators shall themselves form an account of all other charges arising from the suit, and this, which can not be contested by the litigants, shall be paid one-half by each party.

CHAPTER VI.

GENERAL RULES.

ART. 77. After a surveyor has been nominated to perform a measurement, or any other agrarian operation, no other can be nominated for the same purpose, except under the circumstance of the first one having been objected to. When two surveyors are measuring adjoining lands they should come to an understanding before proceeding with the operations, agreeing as to the boundaries and true limits. If they do not agree, they shall institute an arbitration at the expense of the parties interested, so that in view of the antecedents of each one the arbitrators may decide on what is equitable.

ART. 78. Surveyors are those who have obtained their diplomas as such, the professors spoken of in article 217 of the code of public instruction, and doctors of the faculty of science of the University of the Republic.

ART. 79. For the effects of this law, in the part applicable to the circumstances, the following are to be reputed as experts in land surveying: Bachelors of science and letters who are of age and those citizens who, although not holding a literary diploma, are well known to possess competent knowledge of arithmetic, algebra, geometry, topography, lineal drawing, and legal mensuration.

CHAPTER VII.

TARIFF FOR SURVEYING.

ART. 80. The fees which surveyors or experts may receive for their operations in surveys, resurveys, demarkations, divisions, and fixing the boundaries of lands, are whatever they may freely stipulate with the respective parties interested.

ART. 81. Failing any stipulation, the fees shall be arranged as follows:

(1) They shall earn $1 per league for every league they have to travel to arrive at the field of operations, reckoning from the place of departure or from the residence of the surveyor.

(2) For inditing the proceedings and drawing the corresponding map, whether of a survey, fixing boundaries, or division, they shall earn $15, the cost of the stamped paper used is on account of the interested party.

(3) They shall also earn 10 cents for every manzana of land when the area does not exceed 300 manzanas, but, if it should exceed this number, the excess shall be computed at 2 cents per manzana.

(4) If for the purpose of dividing a piece of land it should be necessary to remeasure it, the surveyor shall then earn the fees stated in paragraph 1 and in addition 20 per cent. on the total amount that the operation would cost were it a simple measurement; this on account of the proceedings for division, but if no remeasurements should be made, he shall only charge the 20 per cent.

(5) If the boundary marks of the land are fixed at the same time that the measurement is made, and the surveyor directs the operation, he shall receive $2 for every boundary mark that he sets up, but if it should not be done until afterwards, and the surveyor has to go expressly to set up the marks, he shall earn in addition the fees of paragraph 1 and $10 for drawing up the proceedings, to be increased to $15 if he has to form the plan of the land.

ART. 82. The witnesses shall earn $1 per day whilst they are employed, and the laborers and chain-bearers 50 cents. The surveyor shall make out their accounts so that they may be paid by the party interested in the measurement.

ART. 83. The fees for the revision of proceedings of measurements and remeasurements shall be as follows:

(1) Ten cents for each leaf contained in the proceedings to be examined.

(2) Ten cents for each side of polygon that is examined in order to ascertain the exactness of their length, and to prove the correctness of the angles they form, and of their directions in relation to the true meridian.

(3) Twenty-five cents for every triangle comprised in the figure, and if any other method is employed, 20 cents for each side.

(4) Whenever in order to verify a map it becomes necessary to form a new one, the revisor shall receive in addition 50 cents for each side.

(5) Three dollars for the decision if the writing does not exceed one sheet of paper, adding $1 more for every extra sheet, and in addition the value of the stamped paper if furnished by the revisor.

ART. 84. The present ordinance abrogates all previous laws bearing on lands.

Given in Tegucigalpa on the fifteenth day of the month of May, one thousand eight hundred and eighty-eight.

LUIS BOGRAN.

The under-secretary in charge of the ministry of finance,

SIMEON MARTINEZ.

And by order of the President let the above be published and put in force.

MARTINEZ.

GRAIN TRADE IN MANNHEIM.

REPORT BY CONSUL MONAGHAN.

The average amount of grain docked at Mannheim in years running from 1873 to 1879 was 84,000 tons. For the ten years 1879 to 1888, 234,500 tons, almost a 300 per cent. increase.

WHEAT.

The import of wheat in 1888 was smaller than in 1887, owing to several causes, most important of which were large supplies put in the year before to avoid the increase of duties and good harvests in Servia and Hungary. Wheat from the states just named went direct to Switzerland, Bavaria, Würtemberg, and South Baden, old customers of Mannheim.

Ludwigshafen, Mannheim's near neighbor, just over the Rhine, port of entry for the old Palatinate, saw a dropping off in 1888 to 33,700 tons against 42,000 tons for 1887. The whole Empire imported in 1887, 547,250 tons against 331,000 tons in 1888.

RYE.

In 1888 the import of rye was larger than the total for the two years previous. There came by water in 1888 51,000 tons against 48,333 tons for 1886–'87; by rail 36,000 tons in 1888 against 34,000 in 1886–'87. There came into Ludwigshafen, in 1887, 7,950 tons; in 1888, 12,830 tons. The Empire imported 638,500 tons. It may interest American grain dealers not only to

know how much grain Mannheim imports, but also to know the importance of the Rhine as a distributing stream for all Germany. After running through Holland steamers of deep draught, *i. e.*, river ones, may touch at ports in Prussia, Hessen, the Palatinate, and Baden. At certain periods barges may ascend many miles further, and by means of canals to Kehl and Strasburg. On this river Coblentz, at the mouth of the Moselle, took in 1887 3,400 tons of grain—wheat, barley, rye, and oats; Gustavsburg, 6,000 tons; Mayence, 8,400; Düsseldorf, 28,000; Ludwigshafen, 52,300; Cologne, 54,000; Ruhrort, 177,000; Mannheim, 276,000. Thus nine ports on this river took in a total of 685,500 tons of cereals, while all the ports on the same stream (German ports) took in 768,000 tons. Of the amount for nine cities, Mannheim docked 40 per cent; for all the ports, 36.5 per cent. In 1888 Ludwigshafen docked 56,200 tons. The proximity of this river to the safe ports of Holland, its cheap rates of freight, its excellent condition as a great waterway, fed as it is from the great water-sheds of many of Europe's rivers, the Alps, renders it an agent that might easily serve our merchants to market not only the products of their fields, but of their manufactories among the German people. Where Russia and India can succeed we have nothing to fear.

J. C. MONAGHAN,
Consul.

CONSULATE OF THE UNITED STATES,
Mannheim, May 22, 1889.

ITALIAN EMIGRATION LAW.

REPORT BY CONSUL CARROLL, OF PALERMO.

I have the honor to inclose a copy of a law on emigration, supplemented by regulations, together with a translation of the former, passed by the Italian Parliament and approved by the King on the 31st of December, 1888.

PHILIP CARROLL,
Consul.

UNITED STATES CONSULATE,
Palermo, February 20, 1889.

EMIGRATION LAW.

ARTICLE 1. Emigration is free, save as to the obligations imposed on citizens by law. The military of the first and second categories on indefinite leave, belonging to the regular army or to the movable militia, can not emigrate without the permission of the minister of war.

ART. 2. No one can collect emigrants, sell or distribute tickets for emigration, or become the broker thereof, with the view of gain therefrom, procure or assist their embarkation, unless he shall have received the commission of the minister as agent or the license of the prefect as subagent.

ART. 3. In order to obtain the commission of emigration agent the person must have attained his majority and be a citizen of Italy, residing therein. He must not have lost his civil rights, nor be under surveillance in the interest of public security, nor have been condemned for

any crime against the good faith of the public, nor in relation to trade or commerce or good custom, nor against persons or property, nor have been condemned for infractions of the present law or the regulations in connection therewith.

The commission can not be granted to ministers, priests, or religious bodies, nor to functionaries of the State or local employés of the public administration.

If the commission should be sought by an association, if in consonance with the preceding paragraphs, the request must be accompanied by the constitution of the society, together with the names of the administrators thereof who are designated to sign therefor.

ART. 4. The person to whom the commission of agent shall be granted will be required to deposit from 3,000 to 5,000 lire in bonds of the State as security.

This security shall be returned to the agent when, in consonance with this law, it shall have become diminished, as for example, by payment of fines or expenses of emigrants, as cited. The restriction in question must be made within fifteen days from the date or the request therefor by the civil authorities. The security, save when proceedings are pending against the agent before ordinary tribunals, or before a commission of arbitration to which article 17 of the present law appertains, shall be restored four months after the death of the agent, or after his having declared his intention to retire from the position, or when he may have lost or been deprived of his commission, as per the following article.

ART. 5. The commission shall be withdrawn from the agent when he shall fail to deposit, within the time prescribed, any sums which he may be condemned to pay for infractions of the law which, in accordance therewith, have been deducted from the deposit for the purposes specified therein, or when the agent may have caused or encouraged emigration contrary to article 1 of the present law. The commission shall also be withdrawn when the agent may have procured the departure or embarkation of absconders or the escape of prisoners or of those condemned to remain in the country or at their houses, or of minors going from place to place (tramps), as per provisions of the law of December 21, 1873.

ART. 6. The preceding articles are applicable to the owners of vessels and to national societies of navigation, as well as to foreigners, recognized and authorized by the State to engage in emigration.

ART. 7. The subagents shall be appointed by the agents in accordance with law, who shall notify the prefect of the province thereof. The prefect, having received notice of the appointment of one or more subagents, shall issue a license or licenses in order to enable them to perform their functions, as the representative and upon the account of the agent, provided designations shall in all cases be in accordance with the conditions cited in article 3 of the present law.

ART. 8. The agent shall be responsible for the acts of each of his subagents. He can not engage the services of other persons to assist him in the business of emigration agent, nor for stipulating contracts to that end, as per article 12, etc., and as prescribed in the preceding article.

The subagents can not delegate to others the power to assist emigration, nor appoint persons to act between them and the agent or emigrants.

ART. 9. The license of the subagent shall cease when the agent has lost his patent, and shall be withdrawn by the prefect when the subagent shall have violated the provisions of article 5 of this law.

The license of the subagent can also be withdrawn for any other violation of the present law or regulations under article 20.

ART. 10. It shall not devolve upon the emigrant to pay the agent or subagent for any service whatever, save to re-imburse them for the actual sum or sums expended on his account.

An agent or subagent who violates this provision shall incur a fine equal to ten times the amount out of which the emigrant has been defrauded.

ART. 11. The collection of emigrants can not be made by the agent or subagent outside the district in which they are authorized to act, and hence neither can travel through the country publicly exciting or soliciting citizens to emigrate.

ART. 12. Between the agent, subagent, and emigrant, or, if the latter is a minor, his guardian, according to the provisions of article 88 of the code of the merchant marine, a contract shall be made in triplicate, a copy of which shall be given to the emigrant and the captain of the port, the agent retaining the other.

If one of the party should be unable to write his name the contract shall be signed by the mayor or by an authority of the public security.

The contract must state, besides the name, the age, profession, and the last residence of the emigrant:

(*a*) The date of the discharge from the army or the permission of the minister of war.

(*b*) The place of departure and the place or port of destination.

(*c*) The time within which the departure shall or must take place.

(*d*) The name of the vessel and the post assigned to the emigrant, with the express conditions that the space assigned him shall not be less than that prescribed by article 548 of the regulations of the 20th of November, 1879, for the execution of the mercantile code.

(*e*) When the voyage is not made directly, the period of stoppage at intermediate ports, and, in case of change, the name and character of the new vessel.

(*f*) If the passage is free or in part, or if the total or partial price thereof contains the expenses of subsistence on board, which must in no case be inferior to the ration established by table No. 7, as per the regulations of November 20, 1879, for the execution of the code for the merchant marine.

(*g*) The quantity of baggage which the emigrant can take with him.

Emigrants shall present this contract, or one similar thereto, from the navigation company or owner of the vessel when required to do so.

ART. 13. The contract of departure of emigrants shall be exempt from all taxes and stamps.

ART. 14. No one shall have the right to make an agreement by which the emigrant shall be obliged to give his personal or other services in payment of his passage, and any such contract shall be of no value.

When the passage shall have been paid in full or in part by a Government, an emigration or colonization society, and emigrants are not informed of this, and are required to pay the same, in whole or in part, they shall be entitled to double the sum which they may have thus paid.

ART. 15. The provisions of articles 583, 584, and 585 of the commercial code regulate emigration contracts, notwithstanding any agreement to the contrary, save as prescribed in the following paragraph.

The commission adverted to in article 17 of the present law shall have jurisdiction as to indemnities and actions for damages between agents and emigrants.

In case of detention at intermediate ports, or when the property or cargo of the vessel is transferred to other persons, voluntarily or forcibly, so that the vessel is unable to pursue her journey, emigrants shall have the right, notwithstanding any agreement to the contrary, to board and lodging on board, at the expense of the agent, or, if emigrants can not remain on board, to an indemnity of 3 lire per day; the provisions, however, of article 373 of the mercantile code remaining in force as to captains and owners of vessels. Agents shall be required to send the emigrants to the place of destination, and to re-imburse the captain or owners to the amount of the expenses incurred by them on their account.

If the vessel should be wrecked, abandoned, or prevented by leakage from proceeding on her journey, the agent is alone responsible for board and transportation on board another vessel for the emigrant until he has reached his destination.

ART. 16. The security shall be a guaranty for any damages which may be sustained by the emigrant through the agent in the execution of this law.

ART. 17. The emigrant, or one who has arrived at his destination, can institute proceedings against the agent by presenting his papers, which shall be exempt from all stamps and

taxes, to the Italian consul in the state in which he has arrived, or to the prefect of the province in which the contract was made with the agent or subagent.

Complaints of emigrants shall not be entertained after the lapse of one month from the date of arrival at destination, nor when the departure shall not have taken place within one month after the time stipulated in the contract with the agent.

For the purpose of this act, and to receive complaints thereunder, the residence of emigrants shall be regarded as the office of the consul or prefect.

The consul having received the complaint it shall be his duty to collect all the evidence in the case at once and communicate the same with as little delay as possible to the minister of the interior, who will promptly transmit it to the commission adverted to in the following paragraph for its action and decision.

The damages determined upon will be liquidated by a commission of arbitration, composed of the prefect, president of the tribunal, district attorney, and two counsellors of the province, situated in the principal cities of each province.

This commission shall have authority to set aside any agreement entered into by agents and emigrants, and to render justice to the latter. It shall not be subject to or governed by the forms and regulations of the judiciary, but by the provisions of article 21 of the proceedings of the civil code, and its decrees shall be in accordance with articles 22, 23, 24, and 27 of that code. The contract deposited at the office of the captain of the port shall take the place of the "compromise" act required by article 24 of the code referred to. All the papers relative to the court shall be exempt from all taxes, stamps, and expenses of registering. An official letter from the prefect in lieu of the requirements of article 24 will be sufficient. The decision or sentence of the commission shall be final; no appeal therefrom can be taken, nor can recourse be had to the supreme court.

ART. 18. Any person whatever who may be guilty of collecting emigrants, or assisting them to obtain passage with a view of gain, or who interferes in any manner with the contract, etc., without the proper commission or license, shall be punished with from one to six months' imprisoment, and from 500 to 5,000 lire fine. Should the agent or subagent be guilty of an infraction of articles 1, 5, 8, and 11, the same penalty shall be imposed. The owners, commanders, or charterers of vessels who receive emigrants on board without the contract shall be punished, if national (Italian), with the same penalty, and the captain shall be suspended from the maritime grade provided by article 257 of the code for the mercantile marine. If a foreigner, the fine shall be three times the amount of that of national vessels, which shall be taken from the security which the captain is required to deposit by articles 91 of the mercantile code and 582 of the regulations for the execution of the same.

Agents condemned for a violation of article 396 of the general code shall lose their commission.

ART. 19. A fine of from 100 to 1,000 lire shall be exacted as follows:

(*a*) The agent, owner, captain, or master, who, in connection with emigration, violates the provisions and regulations of the following article, without prejudicing the maximum fine which they may have incurred under this law or the penal code.

(*b*) The agent, owner, captain, or master who, in connection with emigration, violates the order given them by the minister of the interior in grave and urgent cases.

ART. 20. Rules and regulations for the execution of the present law shall be established and approved by royal decree concurred in and witnessed by the council of state.

We order that the present provisions with the seal of the State be inserted in the official records of the laws and decrees of the kingdom promulgated thereby, in order that they may be observed and adhered to by all citizens.

Given at Rome this 30th day of December, 1888.

HUMBERT,
CRISPI.

Witnessed:

ZAMARDELLI, *Keeper of the Seals.*

HONDURAS INTEROCEANIC RAILWAY.

REPORT BY CONSUL HERRING, OF TEGUCIGALPA.

One of the great questions of the time is that of effecting interoceanic communication across the American isthmus, and thus opening to the world the most important highway for the trade and commerce of all countries. This vast problem has not only occupied the attention of our time, but it has also occupied the attention of the past. King Philip II, of Spain, with all the wealth of the Indies at his command, sought but failed to accomplish this great work; and its importance to the world was known and discussed long before that early period.

One of the possibly practical solutions of the great problem is, it seems, about to be undertaken by the construction of a railway across the Republic of Honduras, from Puerto Cortés on the Atlantic to Amapala on the Pacific. An English syndicate during last year obtained a concession to build this interoceanic railroad, and organized in London with the title, capital, conditions, and objects, so succinctly set forth in the following notice published in the Financial News, of London:

HONDURAS RAILWAY COMPANY, LIMITED.

Registered by Johnson, Budd & Johnson, 100 Winchester House, E. C. The capital of the company is £8,000,000, divided into 200,000 shares of £12 each and 72,000 shares of £50 each, which are created to enable effect to be given to clause 3 of the memorandum of association, and into 20,000 of £100, with power to issue any of the 20,000 shares of £100 each and any new shares upon such terms as to preference or otherwise as the company in general meeting may direct. The objects for which the company is established are to acquire, complete, construct, maintain, and work a railway or railways across the territory of Honduras, from Puerto Cortés on the Atlantic to some point in Gulf of Fonseca on the Pacific, and all or any modification of those works, and all such railways or other works as may be authorized by any concession or decree of the Republic of Honduras authorizing the execution of any railway, or railways, or public work in the said Republic, and to develop traffic or operations thereof or in connection therewith; to acquire the concession or any interest in the concession for the said railway or railways, or any other concession or concessions for railways or public works in the Republic of Honduras which the company may decide to acquire, and to accept any liability; to offer to the holders of bonds of the Republic of Honduras ordinary shares of the company, fully paid up, in exchange for and against delivery and transfer to the company of such bonds, and also to purchase and otherwise acquire any railways or other works in Honduras which shall at the time of such purchase or acquisition have been wholly or partially constructed; to acquire, complete, construct, maintain, and work any roads or lines of telegraph, docks, wharves, quays, jetties, warehouses, telegraphs, buildings, or operations of navigation or mining, or other operations authorized or demanded by any such concession or concessions as aforesaid, or which it shall be deemed advantageous or convenient to establish or work in connection with what shall be so authorized or demanded, and generally to do all such acts and things, the doing of which shall be within the scope or be deemed calculated to develop the advantages of any such concession or concessions.

This venture had so faltered and wavered, and even failed, until the stipulated time had expired that it engendered a general belief that the concession, like many others, would prove a fiasco. But extension of time was obtained, and the syndicate sent a corps of engineers to make examinations, which are now concluded; and the chief of engineers, Mr. Lee Smith, remained here at the capital until last month arranging with the Government, to his satisfaction, some minor details, and he is now going away, leaving the assurance that the road will be completed within three years.

What a pity this great work will not owe its completion as it does its design to American genius and enterprise! If our people are to lose by failing to grasp the importance of the enterprise, it is not the fault of their Government or representative here, for all necessary information thereon was given years ago by Mr. E. G. Squiers, who was then our chargé d'affaires in Honduras, and who designed this road and published to the world its superior advantages over all others for a transisthmian railway. In addition to the foregoing published and public facts, I have done my best to draw the attention of our railroad capitalists to the urgent need of transportation facilities in this country and to profits from investments for railroads. Mr. Squiers has perhaps given this subject more study and investigation than any other person, and he estimated the cost of the road to be not necessarily more than $7,000,000, and that the road would pay for itself within the first four years. If this is even anything near the truth, some of our capitalists will regret that they have let the opportunity slip of building this road, as it would not only have increased their fortunes, but would have gained them the title of public benefactors and the gratitude of the people of this Republic, where the want of railroad enterprise is so severely felt and the help of capitalists so much needed and sought.

When it is considered how this important question of interoceanic communication has been so long and continuously agitated it is not a little surprising that there has never yet been but one way actually constructed, and that the little railroad crossing at Panama, and especially since the advantages of the Honduras route have been made so clearly evident. The Panama road cost twice as much per mile as Squiers' estimate of the cost per mile of the Honduras road, and yet it is certain that the Panama road has yielded rich returns for the capital invested. The Honduras route will be not only cheaper in construction, but cheaper in operation. It has better ports, easier facilities for embarkation and debarkation, better sources of supply, a healthier climate, and is shorter in distance and in time between the great commercial centers of the world.

As it is now probable that the road will be built under the aforesaid concession, I herewith forward official copy of the same, but without translation. Its most noteworthy feature is the vast amount of land it grants, thus enabling the syndicate to establish a large British colony in Spanish Honduras, which was done in what is now known as British Honduras, and which resulted in making the latter a dependency of Great Britain. It is not at all likely that

this country can ever be made a dependency of the British Government either as a protégé, as Cromwell so early extended his British protectorate over that part of old Yucatan now known as British Honduras, or as a part of the present colonial system of England.

It is true that this transisthmian route is entirely free from any control of the United States. Yet upon the other hand England as a Government has absolutely nothing whatever to do with it, but we may reasonably assume that the English Government must feel far more than an ordinary interest therein, not only because of its extraordinary importance, but because with all it is an English enterprise.

Furthermore, as the Panama route is under French auspices, and that of Nicaragua expressly under the encouragement of the United States, England may feel like congratulating herself that this route is to be under control of Englishmen.

Aside from the Monroe doctrine, and however little interest England as a government may feel in the enterprise, and however well may be guaranteed its complete neutrality and equality of freight charges to the people of all nations—though nothing is mentioned about either in the concession—the mere fact that Englishmen are to control the enterprise will give to their country advantages over the trade and traffic of Central America which will be of great commercial importance to their country. The financial, political, and commercial influence of the syndicate will be concentrated in London. This will bring to Honduras, to Central America, and to all contiguous localities an increased and increasing number of Englishmen. They will have their connections, established credits, affiliations, and preferences in the old country, and will, of course, appreciate the natural and manufactured products of their own country. More than this, it is well known that this people, like all Spanish-American people—I am now speaking of the masses—are strongly affected by appearances and demonstrations of influence and power. Therefore, the mere fact that it is publicly known that such an important railway is to be built by Englishmen will raise them and their Government in the estimation of the Honduranean people. At the present time here it is considered a compliment to call a foreigner an Americano; so much so that many, especially those who speak English fluently, pass themselves off as Americans who are not such. When a foreigner who is a white person is seen he is very apt to be referred to by the people as "an Americano." It is a well-known fact that, at this time, in this country, American citizenship is generally considered as of the highest type of manhood. But when this railroad is built the glory of American citizenship will be cut in twain, and we will have to divide the importance of being enterprising foreigners with our English rivals. However much Honduras and the world may be indebted to English money and muscle for this railroad, it is a fact they must not forget that more than to any other source it will owe its existence to American genius in the person of our representative, who first demonstrated its feasibility and importance.

It is believed that this road will be self-sustaining and even profitable from the local freight alone within the first ten years, and before any other competitive interoceanic route can be established. It traverses a line not only rich in agricultural resources, crossing fertile plains and rich river bottoms, but it has also valuable precious woods and medicinal plants, etc., that could not heretofore be made available for want of proper transportation. But its advantages to Honduras, and more minute details, I will leave for a later report. This is only intended as a sort of general view of the subject.

Its advantages and importance to the world at large will, perhaps, be greater than any other railroad in existence. Its central position to the balance of the world is clearly shown upon the map. It is almost equidistant between North Africa and the great powers of England, Germany, and France upon the Atlantic side, and China and Australasia, etc., on the Pacific side, and will pass through a country (Honduras) that is called the half-way house between North and South America; and it is also nearly in the central portion of Central America. It can not fail to be a great commercial highway for the trade and traffic of the entire world. It will do more to bring the extremes of east and west together (if "saving time annihilates remoteness of place") than any other artifice of man.

With all its importance to the world at large its advantages to the United States are greater than to any other country, not omitting England after its temporary advantages to that country as before explained. This must be so, because it lies near to us and is on a directly north and south line. It is within three days' easy sail from the mouth of our great Mississippi that so nearly flows through the very center of the United States, thus furnishing an easy and cheap outlet for our surplus products to the many and increasing millions of people in Central and South America and the Pacific islands—peoples different from us in habits, tastes, energy, customs, costumes, manner of living, and modes of industry, and whose countries moreover are different from ours in climate, soil, and productions. These differences promote trade. If we were all alike, we should want the same things and the motive for our exchange would be lacking.

These differences will always insure an increase of commerce along with the certain increase of population.

It is true that Honduras is now supplied by Europe with most of its manufactured goods, excepting machinery. But this is because our country has been almost wholly engaged in self-development. This fact is apparently lost sight of in discussions and references to this subject. When the United States becomes fully developed, and is forced to seek foreign markets for her surplus, as is the case now with the Old World, and when projected transisthmian ways are opened up, it will be impossible for Europe to compete with the United States for the trade of the western hemisphere.

D. W. HERRING,

UNITED STATES CONSULATE, *Consul.*

Tegucigalpa, November 25, 1888.

MANUFACTURE AND USE OF ALCOHOL IN FRANCE.

REPORT BY CONSUL MASON, OF MARSEILLES.

On the 14th of December, 1875, the French Assembly enacted a law repealing the previously existing statute governing the distillation of alcohol from wine, cider, etc., and providing that all farmers and fruit growers may distil wines, lees, ciders, plums, and cherries grown on their own property, without license or previous declaration, and free from all supervision by the revenue officers of the State. This system has been in practice for something more than thirteen years, and, as is alleged, has led to serious frauds and such deplorable effects upon the wine market and public morals that it is now the object of a powerful attack by a large and growing party, including many prominent wine growers in southern France, who demand that free distillation shall be suppressed and all manufactures of alcohol subjected to a uniform control and taxation.

Many of the technicalities of this dispute have no special interest within the province of this report, but the discussion has brought out so many striking facts and statistics concerning the manufacture of brandies, which are largely exported to the United States and other countries, that a brief review of the subject may have a certain practical value.

The inquiry covers the period since 1875. During this time the native wine product of France has declined by reason of phylloxera and various diseases of the vine from 56,405,000 hectoliters (1,490,153,885 gallons) in 1877 to 24,333,000 hectoliters (642,805,861 gallons) in 1887. The point of interest is to examine how the product of alcohol has varied in relation to the yearly vintage:

Year.	Alcohol produced from the distillation of—								Total.
	Farinaceous matter.	Molasses.	Beets.	Wine.	Cider.	Lees, dregs, etc.	Fruits.	Other matters.	
	Hecto.	*Hecto.*	*Hecto.*	*Hecto.*	*Hecto.*	*Hecto.*	*Hecto.*	*Hecto.*	*Hecto.*
1876	101,402	710,670	243,337	545,994	22,388	76,227	1,228	7,929	1,709,175
1877	163,204	642,709	272,883	157,570	9,468	56,191	1,062	5,796	1,308,881
1878	180,469	646,715	331,716	192,952	9,822	51,079	978	3,496	1,417,227
1879	247,171	723,631	364,714	102,651	7,265	36,831	438	5,178	1,487,879
1880	412,585	685,433	429,878	26,200	3,317	17,373	624	4,658	1,581,068
1881	506,273	685,646	563,240	34,324	2,291	24,621	603	4,289	1,821,287
1882	447,066	703,989	556,056	21,962	9,829	22,893	713	4,058	1,766,566
1883	561,932	750,637	629,998	22,710	8,088	28,918	1,408	7,325	2,011,016
1884	481,001	778,714	569,257	35,251	15,567	43,266	2,799	4,609	1,934,464
1885	567,768	728,523	465,451	23,240	20,908	43,853	7,680	7,028	1,864,514
1886	789,963	471,781	683,985	19,513	28,600	49,311	4,424	4,673	2,052,250
1887	765,050	451,826	672,352	32,758	13,595	41,872	2,386	25,796	2,005,635

NOTE.—1 hectoliter = 26.417 gallons.

While, therefore, the production of alcohol has increased nearly 20 per cent. during the twelve years under consideration, the annual distillation of alcohol from wine has fallen from 545,994 hectoliters to 32,758 hectoliters, or 1 gallon in 1887 for each 17 gallons in 1876.

The grades of wine which are usually distilled contain 7 to 8 per cent. of alcohol, and as standard brandy should contain 60 per cent., it requires from 7 to 8½ gallons of wine to make one of brandy, so that the whole amount of the latter actually made from wine could not have exceeded about 30,000 hectoliters in 1886 and 50,000 hectoliters in 1887. Comparing this trifling amount with the quantity of so-called cognac drank in France and exported each year, we obtain some idea of the proportions to which the manufacture of such liquors from various grades of crude alcohol has grown. Nor is this all. A large part of the alcohol actually made by farmers by the distillation of wine and lees is used to reinforce other wines up to 14° and 15°, at which standard they become susceptible of long preservation and the improvement that comes with age. This process is practiced on a large scale during seasons like that of 1888, when, by reason of cold, wet weather, the vintage was unusually low in grade and poor in alcohol.

Here, as in other respects, the present law offers opportunities for fraud, and operates for the benefit of the small retailers of wines and liquors. Under the law wines and alcohol may be used on the premises where grown without payment of any tax. If sold or removed from the place, wines are assessed from 1.65 to 6 francs and alcohol 156.25 francs per hectoliter. Wines may be re-enforced up to 15.9 per cent. of alcoholization and sold without augmentation of the above tax. But the retailer, having bought his wine at the standard limit of 15.9 per cent. strength, can, and often does, double its quantity by watering, and thus is enabled to sell 2 gallons of wine for every one purchased and taxed.

Under these conditions the number of drinking places increased from 386,863 in 1880 to 429,145 in 1885, or one to every 86 inhabitants throughout the country.

Still more regrettable is the facility with which the present law enables small farmers and proprietors of all classes to make low and deleterious grades of alcohol from figs, dates, carobs, beets, mowra-flowers, and other vegetable substances and use it while yet warm from the still in manufacturing raisin wines, which have, to so large a degree, replaced real wines in general consumption. Favored by the cheapness of these materials, which are imported in vast and constantly increasing quantities, any man with room sufficient on his own premises to set up a still may become his own wine manufacturer. A few pounds of dried grapes, soaked in warm water until fermentation begins, produce a sweetish, red liquor, with a certain fruity flavor, and this, fired up with raw alcohol and tinted with fuchsine or other coloring matter, becomes the cheap and wretched substitute which is ruining the ordinary wine market and impairing the digestion of hundreds of thousands of French workingmen and their families. The remedy, which is proposed in the form

of a measure to be presented at the coming session of the Chamber, provides for the suppression of the present right of free distillation by cultivators and the supervision by revenue officers of all distillation, reserving to actual wine-growers a privilege of strengthening their vintages to a limit of 2 per cent., free of tax, with alcohol made from wine grown on their own premises.

FRANK H. MASON,
Consul.

UNITED STATES CONSULATE,
Marseilles, May 15, 1889.

KU-SHAN-TZU SILVER MINES.

REPORT BY MINISTER DENBY, OF PEKING.

I have the honor to report that I returned to Peking on the 27th, after making a trip to the silver mines at Ku-Shan-Tzu, in Mongolia. I was accompanied by Mr. F. D. Cheshire, the interpreter of this legation. We made the journey in Chinese carts.

Passing out of one of the eastern gates our course was northeasterly. We skirted the base of the great eastern hills, which at this season are bleak and bare. They are treeless, but a later spring-time will clothe them with scant herbage. The road led us hour by hour closer to Kŭ-Pei-Kóu, which is one of the three great passes in the mountains. On the third day, having ascended a high hill, we caught our first sight of the great wall of China.

THE GREAT WALL OF CHINA.

This ancient monument has been too often described to warrant any lengthy description of it. I will briefly state that it was finished 204 B. C. Its building occupied ten years, of which seven were after the death of the Emperor Tsin Chi Hwang-ti, who designed it. It commences at Shang-Hai-Wei (latitude 40°, longitude 119° 40′), a coast town on the boundary line between Chi-Li and Shing-King. It terminates near Kia-Yen-Kwan. In a straight line its length is 1,255 miles, but its turnings and windings increase its length to 1,500 miles. It is built of earth, faced with large bricks. It is 25 feet thick at the base, and 15 at the top. There is a crenelated parapet, and all along its length brick towers at various intervals 40 feet high. At intervals all along the wall on the outside are brick watch-towers 40 feet high. On these towers beacon-fires of wolf-dung were lighted when the invader approached. These towers are not peculiar to the locality of the wall, but extend to Peking. In the distance the wall and the towers appear to be in perfect preservation, but a nearer approach discloses dilapidation here and there. The wall goes over and along the crest of the highest mountains. At the old north gate at Ku-Pei-Kóu one sees it extending east and west as far as the eye can reach. It is a beautiful object, and more than any other creation of man suggests the idea of power. It goes across gorges, defiles, steeps, and cliffs, making no deviation for any natural obstacle.

It is the fashion to ridicule this wall as being the insensate display of despotic power, but the traveler who has seen the country and who has considered the condition of China contemporaneous with its construction will not join in this ridicule. The great wall was intended to protect the comparatively unwarlike Chinese against the incursions of their warlike neighbors, the Manchoos and the Mongols. It served its purpose better than countless soldiers would have done. For many centuries it saved China from conquest. Since the Manchoo conquest, in 1643, the wall has become useless, and has never been repaired. We were required to show our passports as we passed through the great wall each way.

JEHO.

The next place of interest was Jeho. It is a city of about 20,000 people, situate near the banks of the Lan-ho, a large stream flowing south from the eastern slopes of the Chahan hills. We here went through a pass of considerable extent cut out of the solid rock. The town is mostly one long street.

On the outskirts are the celebrated hunting grounds and imperial palace. Here the emperors passed their summers, and hither Hsieu-Feng went when the allies took Peking, and here he died. It was impossible to enter these premises.

Jeho is also celebrated for its Buddhist temples. There is one which resembles an ancient castle and is eleven stories high. There are several other temples and numerous pagodas of blue porcelain. Nearly a thousand Buddhist priests live in these temples. Jeho is also noted for its lacquerware and honey. In this country one rarely sees a Mongolian. The Chinese have taken complete possession of it.

ARRIVAL AT THE MINES.

From Jeho our route lay almost entirely in the gorges of the mountains; we would occasionally pass over a high hill or through a road cut into a mountain. On the eighth day after leaving Peking we reached the silver mines at Ku-Shan-Tzu, which was our destination. The importance of these mines warrants a full description thereof.

The Chinese Government has lately introduced American methods of mining into an extensive mining district in Mongolia. The locality selected is Ku-Shan-Tzu, a small hamlet situated about 150 miles north of the great wall and only 50 miles distant from Jeho, the capital of the province. At this point there are veins of lead ore, carrying silver and occurring in limestone. The Chinese works have been carried on in precisely the same way that the Greeks and Romans knew, and without the slightest advance upon those methods. The work of cutting out the ore and the excavations in solid rock necessary to reach the ore was all done without powder. The workman held a short, pointed chisel against the rock and struck it with a hammer held in the other hand, and after several blows succeeded in breaking away a small chip. Chip by chip the rock was broken away, but the work was so laborious that no unnecessary cutting was done, and the passages

opened by the native method of work are all extremely limited in size. They are so low that progression is usually impossible except on all fours, and so narrow that it is impossible often to turn around in them.

It is noteworthy that the Chinese never advanced far enough in mining skill to invent the system of channeling or cutting parallel grooves in the face of the rock, which leaves intervening ridges that can be broken down by wedges. This method, which is more expeditious than chipping away the whole face of the rock, and which was well known to the ancient miners in Europe, seems to be a step beyond the mining development of the Mongolians. Another peculiarity of their work is the use of extremely heavy hammers, 13 to 15 pounds being an ordinary weight for single hand hammers, while in other countries the weight is usually less than 5 pounds. The Chinese consider that steel should not strike steel, and consequently the face of the hammer is made of soft iron which soon wears into a deep cup, forming a tool which no civilized miner could use with safety.

The mine at Ku-Shan-Tzu has been excavated by these methods for a length of 500 feet and depth of 320 feet. Five veins are known at the surface and for 100 feet in depth, but lower down they run into each other, leaving two principal veins. The works are very extensive and indicate a long period of working. The old residents of the place say that it has been opened for thirty years, and that two thousand men were employed in it at one time, but men who are able to judge in such matters inform me that the labor of two thousand men continuously for thirty years would be quite inadequate for the excavation of all this rock by the Chinese methods, and it is quite probable that the mine has been known and worked for one or more centuries.

In introducing the foreign method of work the viceroy of China, Li-Hung-Chang, chose to obtain his men and machinery from the United States. John A. Church, E. M., was commissioned to examine the mine, and, his report being favorable, hoisting and pumping machinery was procured from the Union Iron-Works at San Francisco and the mine opened by a shaft to the depth of 400 feet. This shaft has two compartments for hoisting and one for pump and ladder-way. Drifts or galleries have been opened on the length of the vein at the depth of 100, 200, and 350 feet, respectively.

The lead is mainly limestone, with a small proportion of galena or sulphide of lead, which contains silver enough to yield 20 ounces of fine metal to the ton of mixed rock. A concentrating mill was built to separate the barren limestone from the valuable lead and silver mineral. This mill was supplied by Fraser & Chalmers, of Chicago, and contains machines designed to crush the ore first to coarse and then to fine powder. In its powdered condition it is passed through wire screens and water sizers, from which it goes in streams, each one of which contains one uniform size or coarseness of powder, to the machines in which the separation of the valuable from the worthless part is effected. These machines are of two kinds, jigs, in which the ore is tossed up and down by a stream of water, and low, flat tables,

which receive the finest sizes and subject them to the action of a current that is just strong enough to wash away the powdered limestone, leaving the heavier galena to be swept off by strong jets of water. In both of these machines there is a continuous influx of ore and water, and an equally continuous discharge of the worthless part called "tailings." The valuable silver mineral is discharged continuously or not, according to its proportion in the ore.

This valuable mineral is allowed to settle in boxes and thrown into a brick filter, from which it is removed to the furnace and fused with an admixture of an iron-ore found in the upper part of the mine. As the iron is as valuable as the ordinary ore of the mine all the materials that go into the furnace are silver bearing. A smelting furnace of the best type with steel water-jackets, such as are used in the large smelting works in Colorado, was ordered of James W. Jackson, of Denver, Colo., but had not arrived in the early part of April, 1889. In order to serve a temporary emergency a small brick furnace had been built and had made one successful run.

The mine at the Ku-Shan-Tzu is situated about 2,500 feet above the sea, 250 miles distant at the nearest point, and 100 feet above a small brook which supplies water for the mill. At a distance of 12 miles southwest is the mountain and mine of Yen-Tung-Shan, which rises 1,000 feet higher. This mine is also under Mr. Church's management, as is another called Shan-Ton-Kón, distant about 25 miles. The latter is not worked, but hoisting machinery supplied by the Union Iron-Works, San Francisco, has been erected at Yen-Tung-Shan, and a shaft sunk to the depth of 200 feet. Yen-Tung-Shan is a net-work of extremely rugged mountain ravines dominated by a peak about 3,800 feet above sea-level. The vein is of great length, probably more than a mile, and the Chinese called it the vein of ten li, or 3 miles length. As at Ku-Shan-Tzu, there are several branching veins at the surface, which run together within 100 or 200 feet of the depth. In native hands this mine has produced much more than the one at Ku-Shan-Tzu. Indeed, the natives assert that it has produced 6,000,000 taels, and Ku-Shan-Tzu 2,000,000, but these amounts seem to be based on conjecture or loose assertion. The amount of excavation indicates a large output, but what it has been is unknown.

The present management began work at Ku-Shan-Tzu because it was accessible to carts, while no roads had been made through the ravines of Yen-Tung-Shan. As soon as the work at the former place is firmly established and in regular operation a similar concentrating mill will be built at Yen-Tung-Shan, but all the smelting will be carried on at Ku-Shan-Tzu.

Mongolia is reported to contain one hundred and eighty known mines of gold, silver, copper, iron, and coal, and it is expected that the successful introduction of foreign methods will lead to the development, gradually, of other valuable veins.

The iron mines are worthy of especial mention. There are five large outcrops of magnetic ore, two of which, at least, are as extensive as those of

the most noted mines in the United States. There is valuable cooking coal within 80 miles, and fair steam coal within a mile or two of the iron. The value of these mines has been brought to the attention of the Viceroy Li by Mr. Church, and their great merit will probably call for careful attention whenever China adopts a plan of railroad building with home-manufactured rails.

AMERICANS AT THE MINES.

Professor Church was formerly professor of mining in Columbia College, New York, and more recently the manager of some mines in Arizona.

There are now at the Ku-Shan-Tzu mines seven Americans besides Professor Church and his wife. These men are miners, machinists, smelters, and assayers. They were carefully selected from practical miners in the United States. There are about three hundred natives employed in the mines. A company of soldiers is stationed here for protection. A Chinese director, Chu, resides at the mines. The present outlay is between 4,000 and 5,000 taels per month. The magnitude of the work done will be comprehended when it is remembered that at the time that Professor Church took charge there was nothing here but a barren mountain.

All stores and machinery must be hauled from Tong-Shan, a twelve days' transit. The roads are as bad as they can be. A little village has grown up on the hill-side. The energy and ability of Professor Church are remarkable. He often does the work of a machinist.

PROSPECTIVE DEVELOPMENT IN CHINA.

In behalf of progress in China, as well as in the interest of American skill and labor, it is to be hoped that these mines will prove successful. Success here in this initial movement means the opening of many other mines, the erection of furnaces and foundries, the building of railroads, and the accession of a great population in Mongolia. It means, also, prominence for American engineers and mechanics in the progress of China. If mines are opened, railroads will become a necessity. The idea of Li Hung Chang has always been that China should open mines and manufacture iron and then build railroads. He has devoted much money and time to these mines, and has provided them with the best machinery.

I have great hopes that the mines will prove a paying investment. It is not important that they should be a bonanza, but it is all important that they pay. If they could produce $500 a day, the problem of progress in China under American direction would be solved. My examination leads me to believe that this amount will be realized as soon as the machinery is all in place. The people take great interest in the mines, and many Chinese seek employment in them.*

* In a supplementary report dated May 6, 1889, Minister Denby says: "Information has been received at Peking that the miners in the Ku-Shan-Tzu mines have struck a vein of silver which will produce 500 taels ($600) to the ton. The amount expected to be realized is probably exaggerated in the first ebulition of joy, but there is no doubt that the find is something enormous. Should this vein hold out the terms of my dispatch predicting a great future for Americans in connection with industrial and progressive movements in China will be fully justified by the event."

TUNG-CHA-KOU.

We remained at the mines two days. We were received with the greatest kindness by Professor Church and Mrs. Church and the other Americans.

We passed the great wall again on the return trip at Tung-Cha-Kou. This is one of the three great passes of which Nankou and Ku-Pei-Kou are the two others.

TSUN-HOA.

En route to Peking a couple of days were passed at the Methodist mission at Tsun-Hoa. This station is only three years old, but already there is a large compound containing several comfortable houses, a girl and boy's school, a dispensary, a hospital, and an industrial school. From Tsun-Hoa as a center missionary operations are prosecuted in the neighborhood with great success.

My presence at Tsun-Hoa secured for the missionaries the sealing of their deeds by the sub-prefect. This official called on me and I thanked him for his kindness to the missionaries, and particularly for having sealed their deeds. My visit will do the missionaries some good, I think.

I can not close this report without an expression of my obligations to Mr. F. D. Cheshire. His knowledge of the language and habits and customs of the people was of great assistance to me on this trip, and his kindness and courtesy were invariable.

CHARLES DENBY,
Minister

LEGATION OF THE UNITED STATES,
Peking, May 3, 1889.

AMERICAN INTERESTS IN JAPAN.

EXTRACT FROM THE ANNUAL REPORT OF CONSUL JERNIGAN, OF OSAKA.

KEROSENE OIL.

The import trade of Hiogo and Osaka from the United States is almost exclusively confined to oil. The cargoes of the eighteen ships that entered this port from the United States in 1888 were all kerosene oil, and it should be carefully noted that during the past two years several ships flying the British flag have been entered at this port laden with cargoes of American oil shipped direct here from American ports. Another fact to be specially noted in this connection is that Russian oil is finding its way to Asiatic nations and threatens to win buyers. On June 29, 1888, the steam-ship *Monarch* arrived at this port with a cargo of 27,386 cases of Russian oil, shipped from Batoum, and was followed in August by the steam-ship *Westmeath* with 30,000 cases more. This Russian oil is put up in a way similar to American oil, in 2.5-gallon tins, and in cases 65 net, 125° test, American oil being only 115° test. A case of Russian oil measures 2 feet and the gross weight is 83 pounds. It sells for about 15 cents less in the case than American oil, but the Japanese dealers report that it burns faster and gives out more smoke than American brands. The cargoes arriving from Batoum were not in a satisfactory con-

dition. The cases appeared to have been made of unseasoned wood and were rough in appearance, and the tin badly soldered, which caused leakage, the average being about 2 per cent., and this by steamer, while the leakage from American cans rarely amounts to more than one-half of 1 per cent., and shipped by sailing vessels, too. It is reasonable to suppose that the present defects in the cases and tins in which Russian oil is shipped will sooner or later be remedied, but judging from the quality now in this market it will have to be greatly improved before it can replace American oil to any appreciable extent, though it is a matter that can not be too carefully studied in every detail and possible bearing.

If the stock of oil on hand at this port on the 1st of January, 1888, be added to the quantity received during that year, the supply for 1888 was 1,461,555 cases, and deliveries during 1888 being 1,281,555 cases, the stock on the 1st of January, 1889, was 180,000 cases. The selling prices for 1888 ranged as follows: Atlanta, $2 to $2.30; Chester, $2.02 to $2.25; Peerless (an old sale), $1.46 to $2.25; Stella, $1.93 to $2.18.

COAL.

In May, 1888, a firm in San Francisco commenced to import coal from Osaka and Hiogo, and the trade indicates an increase. Up to January, 1889, it had imported about 14,000 tons, and from reports received here the Japanese coal gives satisfaction. It is principally bituminous, but there are one or two mines claimed to contain anthracite coal, and the matter is receiving the attention of experts.

Coal is bought from the native mines at so much per ton, to which must be added the cost of transportation to the open ports where the foreign buyer can take delivery. It is an industry that is growing and promises to figure largely in the list of Japanese exports. While Japanese coal may not be as good as Australian or American coal, yet as Japan is nearer to the Pacific slope than Australia the difference in price and freight will possibly offset quality and cause the inhabitants of the slope, when purchasing coal from foreign countries, to look to Japan for future supplies. The output of coal in Japan at present amounts to 1,500,000 tons per annum. There is no export duty on coal.

GENERAL OBSERVATIONS.

In one of my reports I directed attention to the number and names of the different steam-ship lines that stopped at this port for freight. Nearly every nationality of any commercial importance, except the United States, sends its flag here, and much of the freight that formerly went to Yokohama and was reshipped there for San Francisco by the American line is now carried to Vancouver by the Canadian Pacific steamers flying the British flag. This line connects with the Canadian Pacific Railroad, which has its terminal point at Vancouver, and both the railway and steam-ship lines are heavily subsidized by the British Government. In the freightage of tea alone there were 4,000,000 pounds lost last year to the steamers that carry freight to San Fran-

cisco to be transported to different parts of the United States over American railways. This loss was a gain to the Pacific and Canadian steamers and to the Canadian railroad. There can be no better proof of the great energy of American companies when they float, unaided, the American flag in the face of the influence and wealth of the British Government. I would submit again the advisability of the American company arranging to have its steamers stop at this port.

Another observation in connection with an agency which, while not of a commercial character in itself, will prove instrumental in advancing American interests in the East, will not be out of place in this report. At all the important treaty ports in the East where there are British residents and merchants there are one or more newspapers edited by one of that nationality, and whatever can advance their interest is sure to appear in print. This is proper and legitimate, and, I believe, is one of the most powerful agencies in behalf of commercial supremacy. American merchants are not inferior to the merchants of any nation in intelligence, industry, and moral standing, and if the manufacturers and merchants of the United States would establish at Yokohama, Japan, and Shanghai, China, a vigorous and intellectual press and sustain it, the cost would be less than the sums they spend on traveling agents and for circulars, and far more effectual in bringing to the attention of the Asiatic buyers the advantages of their machinery, goods, and prices. There is not a newspaper or commercial journal published anywhere in the East under the direction of American influence.

The population of Hiogo is as follows: Native, 102,841; British, 305; American, 154; German, 61; French, 37. The number of firms is as follows: British, 35; American, 10; German, 14; French, 4.

PROGRESS IN JAPAN.

It is pleasant to report that the internal progress of Japan is in full accord with her increased foreign trade. The traveler through Japan three years ago, were he to revisit her shores to-day, would be greatly surprised at the many favorable changes he would see. And this would be true even were he from the United States, where internal developments are almost fabulous. He would have no difficulty in communicating, by telegraph, with friends residing in any part of the Empire or the world, and to all the principal cities and ports he could go either by rail or steam-boat, for while the tracks of the former are laid in every direction, the finest steamers will take him through the inland waters and along the coast washed by the greater seas. It would be within the bounds of accuracy to state that if the compass was placed in the center of Japan, nearly every point would mark improvements already made or in contemplation. The great idea of connecting by rail the old capital, Kioto, with the present seat of Government, Tokio, is about to be realized. Within a few months the track will be completed, and the traveler can go from this port to Tokio on the cars, instead of going from here to Yokohama by steamer, as he must now do to reach Tokio, unless he prefers the tiresome inland journey by Jinriksha. The route by railway will take him through a

very interesting part of Japan — by Osaka, the great commercial city and the New York of Japan, thence over the battlefield of Fushimi, where the power of the last of the Tokugawa Shogun was overthrown and crushed in 1868; thence by Kioto, the residence of the Mikados for more than a thousand years, and where so much that is important in Japanese history was enacted, and which is still the Mecca of her scholars and statesmen; thence in full view of the Hakone mountains, where Iyeyasu won his great victory on the field of Sekigahara in 1600 and laid the foundation of the house of Tokugawa, which governed Japan for two hundred and fifty years, and on through scenery of unsurpassed beauty until he enters the gates of the great city of Tokio, covering an area of 15 square miles, and where, on February 11, 1889, was promulgated a written constitution for the future government of Japan, the best assurance of her permanent progress, and the brightest and happiest page in the history of Asiatic nations.

Among the new industries at this port I would particularly mention the introduction of Edison's electric light during the past year, and with which the city is now being lighted. The company is fully organized, is composed exclusively of Japanese, has its head-quarters near this consulate in a new and commodious brick building, furnished with the best of American machinery. The light gives great satisfaction and is growing into popularity throughout the Empire.

Various other industries have sprung into existence during the past year, of a commercial, agricultural, and sanitary character, such as one would expect to find at a growing port, as well as in a country making such rapid progress as Japan.

T. R. JERNIGAN,

UNITED STATES CONSULATE, *Consul.*

Osaka and Hiogo, February 27, 1889.

A MARKET FOR AMERICAN STAVES.

REPORT BY CONSUL MASON, OF MARSEILLES.

In view of the frequent inquiries which have been received at this consulate from American exporters concerning the market for oaken staves in southern France, it may be of interest to condense into brief form for general information the substance of the various replies which have been sent in response to such demands.

There are in this consular district two important markets for pipe-staves, one at Marseilles, the other at Cette, and there are firms here which make importations for Cette and even Bordeaux.

Marseilles imported last year 4,659,741 staves, of which Austria supplied 4,428,591; the United States, 156,644; Russia, 67,241, and Italy, 7,265.

Cette, although only a small sea-port of about 60,000 inhabitants, is almost wholly devoted to the wine trade and kindred industries, including largely the manufacture of various forms and sizes of casks. The import of staves at Cette is more than double that of Marseilles, the totals for last year being

slightly in excess of ten million pieces. Of this vast import about nine-tenths came from Fiume, which port has for generations supplied southern France with the raw material of wine cooperage, and the remainder was imported from New Orleans, New York, and Baltimore. New York pipe-staves rank in these markets quite below those of New Orleans, which last are in quality and market value equal to the Austrian.

The requirements of Marseilles and Cette in respect to sizes and qualities are identical, so that what is marketable in one port would be equally so in the other. In both places 103 staves count commercially as 100. The size of pipe staves most in demand and their present market values are as follows:

	Per 103.
5 feet long, 5 to 6 inches wide, 1½ to 2 inches thick	$21.23
5 feet long, 4 to 4¼ inches wide, 1 to 1¼ inches thick	18.33
4 feet long, 5 to 6 inches wide, 1½ to 2 inches thick	14.47
3 feet long, 5 to 6 inches wide, 1½ to 2 inches thick	9.65
2 feet long, 5 to 6 inches wide, 1½ to 2 inches thick	6.75

New York staves of the same sizes as above sell from 10 to 20 per cent. cheaper, the best grade — 5 feet long, 5 to 6 inches wide, and 1½ to 2 inches thick — being now quoted at $17.37 and $19.30 per 103.

The above prices are subject to a discount of 3 per cent. for cash or payment within sixty days. When staves are consigned here for sale the expenses of the operation are about as follows: Commission, 2 to 3 per cent; drayage and handling, 1 per cent; brokerage, 1 per cent.

Besides pipe-staves there were imported here last year 863,777 of pine, poplar, and other light woods, such as are used for barrels to contain ocher, plaster, and other dry materials. Of these about nine-tenths come likewise from Austria, and of the remainder 50,000 were brought from the Argentine Republic.

If the foregoing prices, sizes, and terms are satisfactory to American exporters, there would seem to be no good reason why the shipments of oak staves from our country, and particularly from the Gulf States, to both Cette and Marseilles might not be indefinitely increased.

The steadily increasing vintages of recent years, particularly in the departments tributary to Cette, where the replanting of vineyards with American vines has been most general and successful, have greatly stimulated the demand for wine casks. Hundreds of farmers who had permitted their tuns and barrels to deteriorate during the years when their vineyards were unproductive have found themselves forced, during the past two seasons, to sell their wines from the press at merely nominal prices for want of casks in which to store them.

Like most other import business at Marseilles, the sale of staves is usually conducted through brokers, who make contracts for both sellers and buyers and charge a commission of 1 per cent., divided equally between seller and purchaser.

FRANK H. MASON,

UNITED STATES CONSULATE, *Consul.*

Marseilles, June 6, 1889.

COMMERCE AND INDUSTRIES OF DUTCH GUIANA.

REPORT BY CONSUL BROWNE, OF PARAMARIBO.

SUGAR GROWING.

As prices of sugar are rising, and it is generally believed that this will continue for some time, some private parties here have started the cultivation of sugar-cane on abandoned estates. It is reported that a Dutch company has also taken steps to erect a sugar factory on an abandoned estate close to this city. About one hundred immigrants from Java or Maduro (East Indies) will be introduced for this purpose. The premiums to be paid to these immigrants for a five years' contract are: One male and female (married) not older than forty years, $208; one male from fifteen to forty years, $100; one female from fifteen to forty years, $92; one boy or girl from ten to fifteen years, $56; one child from five to ten years, $36.

MINING CONCESSIONS.

By an ordinance of the 11th of March, 1889, the governor of this colony has made an alteration in regard to the granting of concessions for working minerals. Instead of granting concessions for thirty years, as done formerly, they are at present granted for a term of forty years; and in case the owner, by prospecting his concession during the first year, may find that there is a portion of his concession that is of no value to him, on renewing his land on the second year he may only renew that portion which he considers is valuable, while the other portion goes back to the Government.

MINING.

The only mining that is carried on to any extent in this colony up to the present time is alluvial washing, which is done principally by sluicing, and where there is not enough water for that method the gravel is washed by the long-tom process. There has been in the last year quite a number of quartz veins discovered, and the owners are hard at work sinking shafts and running tunnels—developing their property with the intention of selling to capitalists, the present owners being unable to furnish the means with which to erect stamp-mills and other machinery for the crushing of quartz.

STEAM COMMUNICATION.

To the line of four steamers of the Royal West India Mail Service, now running from Amsterdam via this city to New York and back, two more steamers of greater tonnage and better accommodations will be added during this year, so that every three weeks one of these steamers will arrive here from Holland and then proceed to New York. The company has also extended their wharf and added a new store-room to their buildings.

PLAN OF THE ROUTE.

Amsterdam, Paramaribo, Demerara, Trinidad, Carúpano, Cumaná, La Guayra, Porto Cabello, Curaçao, Port au Prince (Hayti), New York; Port au Prince (Hayti), Curaçao, Porto Cabello, La Guayra, Cumaná, Carúpano, Trinidad, Demerara, Paramaribo, Hâvre, Amsterdam.

Sailings from Amsterdam on the 12th of each month at 10 a. m.

Probable dates of arrival of the outward mails at, and of departure of the homeward mails from, the principal stations.

Ports.	Arrive.	Depart.	Ports.	Arrive.	Depart.
Paramaribo	30	2	New York	.....	1
Demerara	3	4	Port au Prince (Hayti)	8	9
Trinidad	6	6	Curaçao	11	12
Carúpano	7	7	Porto Cabello	13	14
Cumaná	8	8	La Guayra	15	16
La Guayra	9	10	Cumaná	17	17
Porto Cabello	11	12	Carúpano	18	18
Curaçao	13	15	Trinidad	19	19
Port au Prince (Hayti)	17	18	Demerara	21	22
New York	25	.....	Paramaribo	23	27
			Hâvre	15	16
			Amsterdam	17	.....

The estimated dates of arrival and departure will be a day earlier when the preceding month comprised thirty-one days, but fixed date of departure from New York the 1st of each month.

MISCELLANEOUS.

Coolies. — During the past year no immigrants from Calcutta were introduced here, nor were any reshipped.

Census. — According to the last official statistics, the population of this colony on December 31, 1888, amounted to 57,365, an increase of 224.

Health. — The general health can be reported to have been satisfactory. No epidemics of any kind have made their appearance here.

THOMAS BROWNE,
Consul.

UNITED STATES CONSULATE,
Paramaribo, May 29, 1889.

NOTES.

AMERICAN FLOUR IN BOLIVIA.—Flour is admitted into Bolivia free of duty and without discrimination as to country of origin or shipment, but it is met by a municipal impost of 1 caliviana (1 caliviana = 68 cents American) per quintal (101 pounds), which must be paid on all foreign flour without exception. So general is this municipal duty that even domestic flour is made to pay this impost on arrival at La Paz or other municipalities of the Republic, though at the lesser rate of one-half the rate imposed on the foreign product. Certain it is that there is no discrimination against American flour entering Bolivia.—*Consul-General Carlisle, La Paz, April 11, 1889.*

COMMERCE OF SIAM. — Consul-General Child, under date of April 5, 1889, transmits the following from the Bangkok Times of April 3, 1889, showing the estimated commerce of Siam:

The export trade for the last two years was as follows: 1888, General merchandise, $3,711,924; rice (approximately) $12,570,255; total export, $16,282,179; 1887, whole exports, $15,593,410; an increase of $688,769 in 1888. Of rice alone the export was in 1888, 7,551,650 piculs, valued at $12,570,255, in 1887 6,662,620 piculs, valued at $11,419,613, an increase of 889,030 piculs and $1,150,642. The imports were as follows: In 1888, $10,872,016; in 1887, $9,946,249; increase, $925,767.

TRADE OF BOMBAY.— The foreign trade of Bombay for the year 1888 amounts to $243,141,666, viz: Imports, $124,756,333; exports, $118,408,333. The imports exceeded those of the previous year by $6,091,666, and the exports by $583,333. The increase in the imports was chiefly in coals, machinery and mill work, iron, railway plant and rolling stock, silk (raw) and piece goods, and spices. The activity in mill construction was greater during the year than at any former period; greater lengths of railway lines were in use, and the Tansa water-works for the city of Bombay were in progress.

The supplies from the United States of both merchandise and treasure were represented in value by $3,533,333 against $3,033,333 the previous year. The trade in merchandise, however, declined by about $433,333. The chief cause for this was a fall of $466,666 in the imports of kerosene oil. Amongst the articles which showed an improvement were gray cotton piece goods, clocks and watches, hardware and cutlery, and some kinds of medicine. The transactions in treasure were confined to importations of silver only, in which there was an increase of $943,452.

In Indian produce indigo showed a small decrease against an equally small improvement in the exports of hides and skins, wool and woolen goods.—*B. F. Farnham, Consul, Bombay, May 17, 1889.*

AMERICAN MACHINES IN CATANIA, ITALY.—In his annual report to the Department, under date of March 25, 1889, Consul Lamantia, of Catania, says that in the production of cereals, and in order to compete with producers of other countries, some farmers, it seems, are beginning to understand that the mechanical reaping-machines are essential to agriculture. In fact, Mr. Charles Beck, representing the McCormick Harvesting Manufacturing Company, of Chicago, Ills., has already introduced seven more of said machines in this province, and no doubt others will be introduced on this island in the course of time. At the request of the agrarian committee of this city, Mr. Beck some time ago gave a trial with one of his machines in the presence of many farmers and agriculturists, who were surprised to see it working to perfection, for whilst reaping the harvest it fastened the bundles and threw them to one side.

There are in this district and city several sewing-machines of different patents and styles, but the American machine is the leading one. The Singer Company have of late remodeled and embellished their well-located establishment on Via Stesicoro Etnea, and have fitted it up in a truly American style. On the right-side entrance of the store the large square show-window is amply filled with all the latest improved machines, and the varieties of embroideries made on them attract the admiration of the passers by. The machines, too, are sold on weekly and monthly payments as in the United States.

PETROLEUM IN MALTA.—The bark *Lizzie Curry*, from Philadelphia, landed here in April 18,588 cases (185,880 gallons) petroleum. There is no doubt but Russian petroleum, owing to its cheaper price, and in spite of its inferior quality, is gradually appropriating the hold that

American petroleum has hitherto had on this market. The simple question of cheapness seems to be the point on which the demand for petroleum hinges. The chief consumers are the poorer classes, who buy in very small quantities, to whom a saving of a penny on a quart has a greater attraction than the superiority of an article. Mr. Charles Breen Eynaud, of Malta, the largest importer of American petroleum, professes to see but a gloomy outlook for our oil market in the future in this district.

In connection with this subject the following incident has just occurred: The sailing vessel *Brothers Assap*, from Philadelphia, loaded with petroleum for Alexandria, arrived here on Saturday last "under average" (needing repairs). The cargo was examined and (to quote from the collector of customs) having been found dangerous in the sense of ordinance No. IX of 1889 (that is, under 70° test), the question of whether she should be allowed to enter the port came up and was decided affirmatively, and now the question as to the locality where the cargo should be temporarily deposited is under consideration. It is an interesting fact, however, that had the *Brothers Assap's* cargo been intended for the Malta market it would not have been permitted entrance owing to its low-grade character.—*Consul Worthington Malta.*

PUBLIC DEBT OF VENEZUELA.—The following is a translation from the Opinion Nacional of April 10, 1889, by Consul Bird:

At the latest hour we, with the parliamentary chronicle of the day, referring to the session of the Senate to which was finally presented the report of the committee of public credit, charged with the scrutiny of the convention for the legal consolidation of the foreign and domestic debt of the Republic, celebrated November 24, 1888, between our fiscal agent in Europe and the council of bondholders of the foreign debt in London. The minister of public credit took part in the session, who, after the report was read and submitted to the discussion of the chamber, immediately manifested that it met his approval and that executive power would sanction it. Said report was approved by the Senate in conjunction with a projected decree that is proposed to Congress, prescribing, in synthesis, the following: The consolidation of the two debts, made by virtue of the existing laws of the Republic, is approved. The bondholders of the consolidated debt will receive interest either in Caracas or London, at their option. Only 54 per cent. of the 40 per cent. of customs dues is destined to the payment of said interest; that is, twice 27 per cent. that the law for the distribution of said dues appropriates to the interior and exterior public debts, respectively. The extinction of the capital will be effected from the same appropriation. Preferred interest at 5 per cent. on the registered debt for public charities and instructions will be paid from the said 54 per cent. The nation appropriates but does not mortgage said 54 per cent., nor any other revenue of the Republic, for the payment of these obligations. In no case will the convention for the consolidation of the debts be a cause for international reclamations. After the bondholders of the foreign debt are informed of the foregoing modifications, the period of sixty days is designated in which to proceed to the stipulated consolidation. In case they may not accept the amendments, said consolidation of the debts of the Republic will be indefinitely deferred.

NAVIGATION BETWEEN ALGERIA AND FRANCE.—The navigation between this colony and France could heretofore be carried on under any flag, but a bill of considerable importance for the French merchant navy has just passed the Chambre de Deputies, and will most probably pass the French Senate. The bill as framed declares that:—

ARTICLE 1. The navigation between France and Algeria will, in the future, only be carried on under the French flag.

ART. 2. No. 9 article of the law of December 29, 1886, is hereby repealed, inasmuch as it is contrary to the present law.

It will be observed that this new bill gives to the French nation a monopoly of the navigation between the two countries.

In the year 1886, the total movement of navigation between the colony and the mother country was as follows: Entrance, 1,287,169 tons; clearance, 1,026,862 tons, divided as follows: Entrance—French flag, 1,256,120 tons; foreign flags, 31,049 tons. Clearance—French flag, 994,097 tons; foreign flags, 32,165 tons. Showing a traffic of 63,000 tons for both inward and outward freight as carried by shipping of other nationalities.

The French merchant marine will not immediately benefit by this change, owing to several nations having navigation treaties still in force with France. These treaties all expire in the year 1892, so from that year the monopoly will exist.

It has been said that this measure is retaliatory as against a neighboring nation, but in my opinion the real cause lies in the every-day increasing tendency of the French to assimilate Algeria with France, and to consider the colony as an integral part of the national territory.

The act dated December 29, 1884, made the customs tariff of France applicable to Algeria; the new law applying to the inter-Mediterranean navigation is only the corollary of this law, and a natural consequence of the policy now being carried out.—*Charles T. Grellet, Consul; Algiers, March 29, 1889.*

IMPROVEMENT OF THE PORT OF PERNAMBUCO. — Under date of March 5, 1889, Consul Borstel, of Pernambuco, reports that the contract for the improvement of the harbor of Pernambuco has been signed, the contractors being Baron Casa Forte and José da Silva Layo, jr. Copy of the decree No. 177, of January 5, 1889, concedes to the above-named contractors authority to construct the works for the improvement of the port of Pernambuco on the conditions following:

"First. The contractors are obliged to execute the improvements of the port of Pernambuco in conformity with the general plans and specifications presented by the engineer, Alfred Lisbôx, on April 14, 1887, with the alterations which may be thought necessary and approved by the Government during the execution of the works. The contractors are obliged also to raise a solid pier on the reefs close to the ancient fort of Picão, according to the project proposed by the engineer, Victor Fournié.

"Second. The improvements which are objects of the present contract are understood to be the following: (1) Dredging all through the port and using all material extracted in the formation of the leveling and construction of the temporary wharves. (2) Construction of a breakwater over the reefs submerged from the light-house at Picão. * * * (3) Construction of an interior pier. * * * (4) Making the reefs higher and filling up breaks of the same. (5) Dismantling the rock that obstructs in part the Barra Grande. (6) Locating the anchoring places by buoys. (7) Repairing and consolidating the dike of Noguira and of the north quay. (8) Construction of wharves.

"Third. The exterior pier will have to be 720 meters long, and will be made of artificial blocks of concrete of 20 tons weight, each from 1 meter below the level of tide-water on the reef forming the original harbor.

"Fourth. The contractors will put alongside the wharves which they construct rails and cranes to load and unload merchandise, and construct in proper places sheds and store houses to protect and preserve the same. The wharf opposite the custom-house is excepted, and will be reserved for the work of the Government.

"Fifth. The contractors must have the works directed by an engineer of recognized capacity and experience.

"Sixth. The works will have to begin within the term of one year, reckoned from the date of the contract, and will have to be finished in the space of six years, also counted from the date of the contract.

"Seventh. During the term of the concession the contractors will have to proceed at their own expense with the repairs which will be necessary, and to maintain the works in perfect condition of preservation, and likewise in all the extension of the port the deepness required by the dredging, allowing the Government the right on the failure of these terms to order the indispensable work to be done on account of the contractors.

"Eighth. * * * The payment * * * of services in charge of the contractors the Government will collect on their account."

[Ninth to twelfth articles relate to manner of collection.]

"Thirteenth. The warehouses built by this company will enjoy all the advantages and favors allowed by law to the custom-house warehouses, and the company will be permitted to issue titles of guaranty of merchandise deposited therein.

"Fourteenth. The Government can trust the contractors with the work of the custom-house warehouses, according to the regulations and necessary instructions.

"Fifteenth. If, during the term of the concession, the Government thinks fit to give orders for additional work to the reefs and dredging in the port on equal conditions, the contractors will have the preference for the execution of said works.

"Sixteenth. The concession will be for a term of thirty-three years, reckoned from the date of the contract, and after that all the works and everything else will belong to the Government.

"Seventeenth. The Government is allowed to repurchase the works, establishments, and dependencies belonging to the contractors at any time after the period of ten years after the construction of the works. The price of the repurchase will be paid, so that, if reduced to shares of the public debt, it will produce an income of 6 per cent.

"Eighteenth. Any question that may arise between the Government and contractors will be decided by arbitration. If the work is performed by a foreign company, the same will have a legal representative in Brazil to treat either with the Government or private persons.

"Nineteenth. Money belonging to the Government, mails, and the baggage of colonists will be landed and shipped free for the contractors, and boats and other small vessels employed for the transport of passengers and baggage will be free of duty.

"Twentieth. For the non-observance of the articles of the present concession fines can be put on the contractors of between $50 and $2,500, which shall be deducted from the payments due the same. The concession will become extinct if the time exceeds the term marked in article 6, if the Government does not wish to prolong the same.

"Twenty-first. The guaranty of the faithful execution of this contract shall be the depositing in the national treasury of $40,000 by the contractors."

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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 106.—JULY, 1889.

MISLEADING STATISTICS.

I.—MEXICAN IMPORT VALUES.

Instruction No. 9, of May 19, incloses copy of a letter from Mr. Switzler, chief of the bureau of statistics of the Treasury Department, as to a difference in values of the imports into Mexico.

I made a report, published in CONSULAR REPORTS No. 94, for June, 1888, in which I gave the invoice value of the imports into Mexico for half-year ending December 31, 1884, at $11,893,347 in United States gold values. Mr. Switzler made report from same data (No. 11, May, 1887–'88), but stated total at $9,027,047, a difference of $2,866,300, or at the rate of $5,732,600 per annum, a very serious percentage of difference.

On seeing his report I detected the error into which his unfamiliarity with Mexican statistics had led him, and reported it fully to the Department. I also sent him a note showing how the error occurred. To the Department's letter transmitting copy of my dispatch he replies, under date of May 17 last, that he has received authentic information that his figures are correct and mine wrong. He thanks me for calling his attention to the matter as it has enabled him to verify the figures in his report. With all due respect, I beg to state that his figures can not be verified, because they are wrong. The highest Mexican authority resident in the United States, at Mr. Switzler's request, made inquiry of those officials who are charged with the preparation of this data in Mexico, and their reply was unanimous that I was correct and Mr. Switzler wrong. This result has been fully stated by the gentleman in question to Mr. Switzler, and I must confess my inability to understand how he can still declare that he has received authentic information as to the correctness of his figures and the incorrectness of mine.

Besides this, I have to hand a personal note from Mr. Javier Stávoli, the chief of the Mexican bureau of statistics, showing how the values in question are obtained and confirming the correctness of my report.

The error of Mr. Switzler is this: The Mexican tables gave, in Spanish, invoice values, plaza values, and duties paid. Mr. Switzler proceeded to reduce these three to United States gold at the current rate, some 75 cents on the dollar. As to plaza values and duties paid this is all right, but not as to invoice values. Mexico, like the United States, fixes the equivalents of foreign moneys of account, and these values are proclaimed from time to time by virtue of article 67 of the general tariff laws of Mexico. By this table of equivalents the American dollar is rated as equal to the Mexican dollar, the pound sterling at five Mexican dollars, the franc at 20 cents, etc. All import statistics into Mexico are reckoned at these rates. If the New York invoice value says $5,000, the amount is stated as $5,000 in the column of invoice values; if it says £2,000, it is reduced to, and stated as, $10,000, and if 20,000 francs, as $4,000. These being so, of course the values could not be changed, as Mr. Switzler has done, without taking something like 33 per cent. off the original invoice values.

As Mexico is our nearest and most important southern neighbor, and as our relations are continually increasing, the correct figures as to our trade are worth considerable effort. Having taken great pains to obtain this data, and to have it absolutely correct, I have, of course, been restive under Mr. Switzler's charge, and have taken my first leisure to report fully.

In his report he also gave data for the half-year ending December 31, 1885, and I have also made report for same time, and in his he has made the same very serious error. As the chief value of statistics is lost if they are not correct, and as Mr. Switzler refuses to correct his figures after he has been fully assured by the very highest authority of their incorrectness, I respectfully request that this report, or the substance thereof, be made public in CONSULAR REPORTS, and that a copy hereof be sent to the Honorable Secretary of the Treasury for his information.

WARNER P. SUTTON,
Consul-General at Nuevo Laredo.

WASHINGTON, *June 19, 1889.*

2.— GERMAN-AMERICAN STATISTICS.

[In CONSULAR REPORTS No. 102, for February, 1889, pages 238–240, a tabulated statement appears, headed "Imports into Germany from the United States," with three subheadings as follows: "Value of imports," "Duty collected," and "Percentage of duty." As the statement exhibits the imports into Germany from all countries, instead of from the United States, its publication has excited much confusion and criticism. The manuscript of the statement having been destroyed, the Department, on May 7, 1889, called upon the consul-general at Berlin, by whom the statement was compiled, for the necessary explanation, and received the following reply:]

Last summer Mr. Worthington C. Ford, chief of the statistical bureau of the Department, requested the consul-general to furnish him with a statement showing the "percentage of duties collected in Germany on such of

the more important articles as the United States obtain from abroad to total values of such articles imported by Germany from abroad."

The German returns for 1887 not yet being published, the returns for 1886 were used for comparison. The statement was prepared, using in the heading the same identical words as above quoted.

In this statement the column "Value of imports" meant total value of German imports from all countries; "Duty collected" meant German duty collected on the value stated; "Percentage" meant percentage of such duty to the value stated; and the articles set forth as imported by Germany from all countries were such as also the United States import from abroad. From the tone of Mr. Ford's letter it was construed that such statement was to be used for statistical purposes. The top heading, "Imports into Germany from the United States," as it appears in the printed reports, was not used at all by the consul-general, and the next following words are entirely different from the passage above quoted as given by the consul-general, thus confusing the report and its meaning.

Your supposition that the imports credited to Germany represent imports from all countries is entirely correct and corresponds with the consul-general's statement to the statistical bureau.

F. VON VERSEN,
Vice and Deputy Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, May 27, 1889.

THE AMERICAN EXPORT TRADE.

REPORT BY CONSUL MASON, OF MARSEILLES.

An experienced and highly intelligent business man—a native of Holland, who has large interests in Belgium and northern France—returned recently from an extended tour through the United States, and was asked socially to state his impressions of business men and methods as he found them in our country. His reply embodied some observations which, although by no means new, and, perhaps, in some sense exaggerated, may be worthy of record for the practical suggestions which they contain. Said he.

I found the whole country a marvel of luxury, improvement, and energy. A whole century of progress seems to have been made since I visited the States a year or two after your war. The American business men are masters of skillful organization; they systematize labor as it is done nowhere else, and with their ingenuity and clever adaptation of means to ends they reduce the expenses of manufacture, handling, etc., to a minimum. In their quick, unerring grasp of new situations and conditions, their zeal in finding and developing natural resources, they are simply unequaled. In these respects we of the Old World are hardly in the race with them at all.

But there is one point in respect to which your countrymen are singularly weak, and that is in their management, or rather lack of management, of their foreign trade. For proof of this one has to look no further than the fact that your country, with all its magnificent natural resources, its unrivaled manufacturing capacity, and its protective tariff, now imports, each

week, more than it exports. Your people ought to be the greatest exporters in the world, but they are not, for the reason, so far as I could see, that they have cared hitherto little or nothing about foreign markets, except periodically as a dumping ground for their surplus products in times of dull trade at home. The difficulty is not about prices. Not only all your food products, but boots and shoes, cotton goods, and an infinite variety of other manufactures are not only as cheap or cheaper, but superior in quality to those of European make. But your people think only of their home trade. Their immense territory, their freedom from international complications, and their lack of a colonial system have made them self-centered and independent, and this has left them what might be termed provincial in a large commercial sense. The hostility of Congress to legislation which might have created merchant steam-ship lines and the neglect which has left your consular system practically without revision since before the era of steam-ships and ocean telegraphs are simply a reflex of popular indifference to the whole subject of foreign commercial relations. It was an American statesman, I believe, who asked, with fine irony, "What have we to do with abroad?"

The time is coming when your people will change all that. There must be new outlets for their surplus products, or, notwithstanding the country's constant and marvelous growth, their markets will become congested, like ours; and then, with your high-paid labor and free ways of thinking, there may be trouble.

Probably no one has larger opportunities than the American consul for knowing how accurately this kindly but plain-spoken critic has in the foregoing words pointed out the weakest spot in our commercial system. There are, of course, many exceptional cases in which individual firms in the United States have built up, by skill and good management, a large and profitable traffic with Europe, the East Indies, and South America. There is an American sewing-machine company whose agents and machines may be found in almost any village of western Europe. Even in Corsica, Sicily, and the Balearic Islands their illuminated posters, framed and glazed, decorate nearly every way-side cabaret and market-place. This company began early and by the right methods, and its foreign trade is enormous, profitable, and secure. It studied the wants of the people in each country and the proper methods of reaching them. It does not send English agents and circulars to France, nor French catalogues to Germany or Spain. It realized at the outset that, in order to do business with a foreign people, it is necessary to adopt the language and methods which prevail in that country.

It is just here that the American manufacturer, in his earlier efforts to establish a foreign market for his product, so often fails. He knows that he has a good thing to sell; it has been highly successful at home, and he feels sure that it has only to be offered abroad to be equally appreciated there. He sends to the American consulate a catalogue, a package of circulars (all in English, of course,), and a lithographed letter stating that he has decided to open a foreign trade, and asking that the circulars be distributed among firms in the consul's district who might likely be interested in his machine or product. In many cases the article offered is practically new in the foreign market, designed to supply a popular want which has hitherto been scarcely felt outside the United States.

The consul, however, distributes the circulars, translates and explains them, and persuades one or more firms in his district to write for further

information, particularly in respect to terms. Not infrequently the reply is something like this:

DEAR SIR: Yours of 15th to hand and contents noted. Our terms are 5 per cent. from list f. o. b. cash, or three day's sight on B. L.

Yours truly, U. S. & Co.

The foreign merchant—a Frenchman, let us say—sits down with his lexicon to translate this sententious response, and if he succeeds, which he frequently does not, he feels that in some way his inquiry has given offense, and this brusque, laconic reply must have been meant as a rebuke. The letter says just what the American means, but to a person trained in the elaborate and courteous phraseology of French commerce such economy of words is chilling. But, most important of all, he finds the proposed terms quite out of the question. For a standard article of popular utility manufactured in his own country the French merchant may, and often does, pay cash or its equivalent within thirty days of receipt of goods, but as to sending money across the Atlantic to pay in advance for an article that he has never seen, and the sale of which is to be at best an experiment, all this is quite out of his line, and the incipient negotiation falls to the ground. Meanwhile his store is thronged with agents of French, Swiss, and English firms, eager to place goods in his hands for sale on commission, or to sell to him on terms consistent with the usages of the place and with all his previous experience.

All this is not denying that the direct cash or short-credit business methods common in the United States are the best possible in all that relates to the home trade. But they differ radically, in many respects, from those which prevail abroad, and which require to be studied and more or less complied with by those who seek to build up a foreign demand for new kinds of merchandise, however superior in quality or obvious in utility.

As an example of a liberal, enterprising spirit unskillfully applied there may be cited the case of an American manufacturer of a new type-writer, who is endeavoring to introduce his invention in France by offering to furnish it to the trade for cash at 50 per cent. discount from the retail price. The machine is a miracle of ingenuity, effectiveness, and cheapness, but there is but one method by which it can be effectively introduced in this country; that is by establishing a central depot in Paris, equipped with French employés and printing, through which agents in provincial cities and villages can be supplied under a system of time payments or a commission on sales.

Nothing is more curious than the persistence with which importers in different countries cling to certain established grades, brands, and forms of merchandise. This is true of the United States, though perhaps in a less degree there than elsewhere. In Corsica, for example, which supplies most of the candied citron of commerce, that product is packed in cases of one certain form and size for New York, another totally different for England, and a third for Germany and the Netherlands. The citron thus put up for the English or German market would not be marketable in the United States. The same is true of the crystallized fruits which are shipped so largely from

southern France to most foreign countries, and of aniline dyes, all of which have their special packages and labels, respectively, for the Chinese, Indian, and South American markets. The cleverness of the German and English in studying and complying with all these arbitrary and often whimsical conditions has been noted in American consular reports until the theme is threadbare.

In addition to this frequent neglect of American shippers to study the wants of foreign countries and to adopt their peculiar labels, methods of packing, and terms of sale, there is a certain carelessness, a want of fixed, persistent purpose which often operates most unfortunately. A single instance will illustrate: About a year ago a letter was received at this consulate from a large canning company in the State of New York, inclosing a wholesale price-list of various canned fruits, vegetables, shell-fish, etc., and asking that an effort be made to introduce their goods in this market. The prices proposed were highly advantageous, the assortment extensive, and the terms of payment, shipment, etc., satisfactory. Moreover, there was the advantage that American canned goods are well known and highly esteemed in most European markets. Arrangements were made here, first with a leading grocer who, besides his ordinary retail trade, furnishes canned goods to numerous hotels in this vicinity; and secondly with a ship-chandler, who has agents at several other Mediterranean ports who provide such supplies to vessels in the coasting and foreign trade. The grocer sent through the consulate a small sample order, the consul personally guarantying the payment of the account on receipt of the goods. The ship-chandler—an American, by the way, long established at Marseilles and entirely responsible—also gave an order and made propositions which, in accordance with the original letter from the canning company, seemed likely to open up an extensive and permanent business. He had been for years buying American canned supplies in London and Liverpool, and was delighted with this prospect of obtaining them in future fresh and direct from first hands.

And now for the result: Neither of these orders, nor one of the half-dozen letters which were written subsequently in regard to them, was ever acknowledged. Both merchants waited several weeks, then came to the consulate to complain. The consul wrote repeatedly, repeating the substance of previous letters, but no response of any kind has ever been received, and the orders of both houses have long ago been placed elsewhere. It is understood that, for some reason incident to the crop of last year, the prices of canned goods changed, or the home trade of that particular company improved, and it abandoned the scheme of selling part of its product abroad. Why trouble itself with an export trade as long as there was a good market nearer home?

This was an extreme and perhaps unimportant case, but it illustrates a fact which is beyond denial, the indifference of a large class of American business men to all foreign trade, and brings us round to the concluding remarks of the critic the gist of whose strictures has been already quoted, viz: "The first step to be taken by your people in building up a foreign trade

must be to find out and definitely decide that they want one. Whenever they so decide and set about developing it with the same intelligence and energy that they have displayed at home, then the struggle which we, in the worn-out and crowded countries of Europe, have so long been dreading will have come."

It goes without saying that for all except food products and a few raw materials the markets in all European countries are sharply contested and unpromising. It is, as a principle, almost impossible to sell any foreign manufactured article in France unless it is distinctly cheaper or better than any similar product of French origin. The self-protective spirit is strong and universal in these old and heavily burdened nations, and whatever merchant seeks to supply them with the product of alien industry must adapt his goods, his terms, and methods of dealing as closely as possible to their notions and to the customs to which long usage has given almost the force of commercial law.

FRANK H. MASON,
Consul.

UNITED STATES CONSULATE,
Marseilles, May 20, 1889.

AMERICAN AGRICULTURAL IMPLEMENTS IN MANITOBA.

REPORT BY CONSUL TAYLOR, OF WINNIPEG.

I forward statements of the trade of this consular district with the United States in agricultural machinery and implements, with further details of tariff restriction, and other circumstances affecting the importation.

The district of Manitoba and other territories formerly under the jurisdiction of the Hudson Bay Company, and known as Rupert's Land, or the Colony of Assiniboia, had a local tariff of 4 per cent. ad valorem, with a specific duty of 1 shilling sterling per gallon upon liquors and wines and a considerable free list, which included agricultural implements. This tariff was continued after the transfer of that country to Canada from 1870 to 1874, when the Canadian tariff, averaging 17½ per cent. ad valorem, imposed that duty upon agricultural machinery and implements. In 1879 it was raised to 25 per cent., and in 1883 to 35 per cent., which is the existing rate, being among the highest rates imposed by the Canadian tariff, and which, with a like duty on canned meats and fruits, have had a very depressing effect upon the settlement of the country.

On the 22d of May, 1888, the following modifications of the general duty of 35 per cent. went into effect: Garden rakes, two and three pronged forks, and hoes, 5 cents each and 25 per cent. ad valorem; hay-knives and four, five, and six pronged forks, $2 a dozen and 20 per cent. ad valorem; shovels and spades and spade blanks, $1 per dozen and 25 per cent.; scythes $2.40 per dozen.

The following statement exhibits the importation from the United States for the year ending June 30, 1888:

Articles.	Quantity.	Value.	Rate of duty.
Drills, grain-seed.....number...	75	$495	35 per cent.
Fanning-mills.....do.....	1	35	Do.
Harrows.....do.....	9	171	Do.
Harvesters.....do.....	10	1,150	Do.
Hoes.....do.....	12	3	5 cents each and 25 per cent.
Mowing-machines.....do.....	21	855	35 per cent.
Plows, sulky and walking.....do.....	1,530	25,430	Do.
Spades and shovels.....dozen...	7½	79	$2 per dozen.
Scythes.....do.....	¾	4	.....
Unenumerated.....	.....	8,749	35 per cent.
Total.....	.....	36,966	

The importation from Great Britain subject to the same duties amounted to $387. Total foreign and dutiable imports of agricultural implements, etc., $37,353. This taxation is so nearly prohibitory that I estimate, in the absence of reliable statements of free imports from other provinces of the Dominion, that the importation from eastern Canada is five-fold that from the United States, or $184,435, making an aggregate of $221,788.

There is also a duty of 20 per cent. on the value of packages or cases.

There are indications that the demand for articles of American manufacture will be increased during the year 1889.

The values of the implements above enumerated imported from the United States during the quarter ended March 31, 1889, was $15,955, against $6,087 for the March quarter of 1888.

JAMES W. TAYLOR,
Consul.

UNITED STATES CONSULATE,
Winnipeg, May 1, 1889.

MELBOURNE CENTENNIAL INTERNATIONAL EXHIBITION.

REPORT BY CONSUL GRIFFIN, OF SYDNEY.

It was my good fortune to pay several visits to the Centennial International Exhibition shortly after its opening ceremonies in August, 1888, and previous to its close in February, 1889, in company with Hon. W. G. Markham, president of the New York Wool Growers and Sheep Breeders' Association, who was at that time visiting Australia with the view of furthering the importation of the celebrated Vermont wrinkled merino sheep into the great island continent.

Mr. R. Burdet Smith, M. L. A., the executive commissioner for New South Wales, who was mainly instrumental in securing the Australian wool trophy for the New South Wales court, took great interest in Mr. Markham's

visit, and every opportunity was given us, not only by Mr. Smith, but by all the officers of the various commissions, to see the exhibition in the best possible light.

It is a remarkable fact that a colony with a population little larger than that of the city of Chicago should conceive and carry out one of the most successful international exhibitions ever held in the world. The site selected for the building is one of the finest in the southern hemisphere. The centrality of the building and the various channels of access to it are all that can be desired. The building itself, with the annexes, covers an area of 35 acres, within 13 acres of the space occupied by the great exhibition at Philadelphia in 1876. The Sydney exhibition in 1879 covered 15 acres; that of Melbourne, in 1886, 22 acres; and that of the Crystal Palace at London, in 1851, was 20 acres. The view of the building through the Grand Avenue of Nations, with its immense pillars, Byzantine arches, and the great dome rising in the distance like that of St. Peter's, presents a magnificent, a fascinating, and a bewildering picture. As far as the eye can reach flags, banners, and transparencies can be seen waving over innumerable treasures, as wonderful and varied in their aspects as the ever-changing scenes of the kaleidoscope.

One of the most interesting features of the exhibition is the number of countries that took part in it. Great Britain voted the sum of $25,000 towards it, the United States $50,000, and Germany $62,500. Among the countries officially represented were six of the Australian colonies, viz, New South Wales, Victoria, Queensland, South Australia, Tasmania, and New Zealand, and Great Britain, France, Austria, Hungary, Belgium, and the United States of America, while Canada, Italy, Switzerland, Norway, Sweden, Spain, Holland, India, China, Japan, Fiji, and New Guinea sent exhibits.

THE NEW SOUTH WALES COURT.

The different colonial courts occupy one entire side of the vast building, while those of Great Britain, Germany, France, the United States, and other countries are placed immediately opposite. On entering the building at the eastern gate and passing through the Grand Avenue of Nations the first court to the right, and to which all eyes are turned, is that of New South Wales, and although it does not occupy so much space or contain so many objects as that of its great rival, Victoria, it far transcends it in the taste and arrangement of its articles of exhibit. The visitor, in strolling through the various courts along the Grand Avenue of Nations, is at once impressed with the extent and variety and wonderful richness of the natural products of New South Wales. Every gift of nature seems to have been poured out with lavish hand upon this favored colony. Not only vast trophies of gold and silver, coal, iron, copper, tin, and marble, but diamonds, opals, sapphires, rubies, garnets, and indeed nearly all the metals, minerals, and gems of the earth seem to be scattered in prodigal profusion throughout its vast territory.

The committee in charge of the New South Wales court did their utmost to display to the best advantage the various products of the colony. Amongst the many objects of interest in the court I have thought to mention is the model of the Jenolan or Fish River Caves on the right-hand side of the court, and near the Nicholson street entrance. Some of the best talent that could be procured was employed in the construction of this model, so as to preserve as far as possible the principal features of the real caves. The model is about 80 feet in height and varies in width from 6 to 45 feet, the whole of the space occupying a little over 2,500 square feet. It is built of cement or of some other kind of hard substance resembling stone, and at first sight looks like a huge pile of moss-covered rocks. The entrance to the model is through a small arch surmounted by a larger one, and is an exact copy of the entrance to the Imperial Cave. The visitor, however, is not required to carry a torch or lamp, for the model is lighted by a series of gas jets so arranged as to exhibit every object of interest in the mysterious cavern. The representations of stalactite and stalagmite formations are the best I have ever seen. The student of natural curiosities will, in some respects, derive more satisfaction from a visit to the model than to the real cave, for the artist has included in his work some of the features of other caves in the same neighborhood. The objects that seem to attract the most attention in the model were the Ribbon, the Fairy Handkerchief and Shawl, the Lucas Cave, the Bone Cave, Little Mystery, Katie's Bower, and Nellie's Grotto. The Ribbon in the real cave is simply an accumulation of deposits of lime stretching in a slender line, like a ribbon, across the wall of the cave. The Fairy Handkerchief and Shawl are made of lace-work, and are so very beautiful that they seem to be very properly named.

There are a number of other models in the New South Wales court designed for educational purposes, and among them I will mention the "Sydney Harbor and its surroundings," and the "Landing of Captain Cook at Botany Bay." The former is a topographical relief model and is designed to represent upon a table 15 feet long and 8 feet wide an area of 50 miles in length and 9 miles in width. Every bay, estuary, cove, rock, river, and lake is accurately portrayed in the model. The picture of Middle Harbor is a marvel of beauty. The model is executed upon the usual plan of allowing 8 chains to the square inch. The landing of Captain Cook at Botany Bay is portrayed upon a stage with proscenium box, scenic painting, and other accessories of the theater. The human figures are of wax-work and each is dressed in the costume worn at the time of the landing. Captain Cook is portrayed in the act of reading the proclamation and formally taking possession of the country in the name of the British Crown. The views of the bush scene, the native inhabitants with their boomerangs, and the man-of-war in the distance are much admired.

The coal and wool trophies represent the two most important industries of New South Wales. The coal exhibit is erected out of large blocks of black, glistening coal in the form of an arch, and above, beyond, and through it

can be seen a still more magnificent arch, made of immense bales of snow-white wool. The output of coal, we are told in conspicuous figures, is 3,000,000 tons per annum, and I noticed in the list of countries to which this useful article is sent the name of the United States. Between 300,000 and 400,000 tons per annum are shipped to the States on the Pacific coast, for the reason that this product can be more economically brought from Australia than from the Atlantic States. The supply of coal on the Pacific coast is limited and the mines there are seldom worked profitably.

The wool trophy or arch is 35 feet in height and 50 feet in width, and under the central arch there are several smaller ones. The spaces between and above the arches are filled with closely pressed bales of wool, and between the bales are samples of wool, some of which consist of whole fleeces. At intervals along the arch are the flags of different nations to which the great Australian product is exported. The number of bales exported last year from the group was 1,269,587. A marble bust of John McArthur, who first introduced sheep into Australia, adorns a pedestal near the trophy.

The timber exhibits of New South Wales are of unusual interest on account of the large number of samples of hard woods. Mr. J. H. Maiden, the curator of the Technological Museum at Sydney, has chargè of the timber exhibit, and he is of opinion that the hard woods of Australia will in the near future be extensively used in Europe and America for the manufacture of furniture. While in the court Mr. Maiden directed my attention to a piece of iron bark that had been taken from a drain near the land office at Sydney, after a period of sixty years, and which appeared to be in a wonderful state of preservation. He also showed me some samples of the *Sida retusa* with fibers therefrom. This plant is called Paddy's Lucerne, and is classed amongst the noxious weeds. It grows luxuriantly without cultivation in various parts of New South Wales and Queensland. It attains a height of 6 feet, and is not affected by either heat or frost. It yields about 3 tons of fiber to the acre, worth from $200 to $250 per ton.

It would require a good-sized volume to give even a brief description of the various kinds of raw products in the New South Wales court.

The display of grain is one of the best in the exhibition. The leather exhibit should not be overlooked. A large number of kangaroo and other marsupial skins are very tastefully displayed along with those of the platypus, a curious mammal resembling a mole or small otter, highly prized for its soft and beautiful fur. It was for many years a vexed question whether the platypus is born alive or hatched from an egg. Mr. W. H. Caldwell, who holds the Balfour traveling fellowship of Cambridge, was the first to solve the question. Mr. Caldwell visited its haunts in the northern territory and remained there long enough to find out that it is hatched from an egg.

The silver trophy is altogether unique. It is 40 feet high and weighs 5,508,836 ounces, or 169 tons, and represents the quantity of silver taken from the mine since its opening, in 1886. The base of the column is shaped like an octagon; silver leaves and other figures adorn the cornices.

THE VICTORIAN COURT.

The contrast between New South Wales and Victoria is very forcibly illustrated by the attention given to manufactures in the latter colony. Almost every conceivable article of handicraft is made in Victoria, and these industries are said to have been built up by her policy of protection; and although she has no coal mines within her borders that can be profitably worked, she seems determined to make every country in the world tributary to her wealth, in order that she may become the great manufacturing center of the southern hemisphere. To illustrate her aspirations I give below a copy of an inscription on a huge bell exhibited by Victorian foundrymen:

I was made on Victorian soil, out of New South Wales copper and Tasmanian tin, melted with New Zealand coke by Englishmen, Scotchmen, and Irishmen, under the management of a South Australian company.

Victoria suffers less than the other colonies from drought, and is therefore in advance of all of them in the way of agriculture. This, however, is more than counterbalanced by the superior advantages possessed by New South Wales for pastoral purposes. On the other hand, Victoria has been more successful than the mother colony in mining for gold, and it is a remarkable fact that out of the total yield of gold in Australia, viz, 82,205,355 ounces, more than two-thirds of that amount was the product of the Victoria mines.

Victoria has had to undergo much severe criticism for the amount of space given to her wine and beer exhibits. These exhibits are, strange to say, the most conspicuous in the exhibition. They take the form of huge arches made of casks, vats, barrels, hogsheads, bottles, etc., of all sizes and descriptions. Some of the barrels will not hold over a pint, while others are larger than any hogshead I have ever seen. I noticed one, said to be an exact copy of the famous cask at Heidelberg upon which young men and women were wont to dance quadrilles in the olden time.

THE QUEENSLAND COURT.

The space allotted to Queensland is not at all commensurate with the importance of the great northeastern colony. The frontage along the Avenue of Nations is only 50 feet, and the depth is not more than 75 or 100 feet, but every part of it is economically used. The arch through which the court is entered is of oriental design, and is surrounded by a group of statuary; near to it are several fountains, one of which is made of pearl shell, the produce of the islands in Torres Straits, belonging to Queensland. It is 14 feet high and all the colors of the rainbow glisten from the edges of the thin concentric layers of pearl overlapping one another and reflecting the light.

Near to the fountain is a glass case containing the largest and finest collection of opals ever seen in the world. The opal mines of Queensland have been profitably worked during the last four or five years, and there is no reason why they should not in the near future prove a great source of wealth to the colony.

The gold trophies of Queensland are among the largest and finest in the building. They stand like colossal sentinels, one on each side of the entrance to the court; the one on the right is made of auriferous vein stone from the mines of Gympie, Ravenswood, and Croydon. The stones rest upon huge blocks of gold-bearing quartz and hematite from Mount Morgan, said to be the richest gold mine in all the world. The precious metal has been taken from Mount Morgan almost absolutely pure with scarcely a trace of silver or any other metal.

In the distance, towering above and beyond the other trophies, is a pyramid 15 feet high of glittering tin ingots, weighing 13 tons, resting upon a mass of staniferous ores. Some curious specimens of Mount Morgan gold are contained in a glass case near the trophy, composed of boytroyoidal or slender strings of stalactite formation resembling dark brown icicles.

A series of cabinets, containing 537 different specimens of polished timber, separate the Queensland court from that of South Australia.

The collection of grasses must not be overlooked, as it is very tastefully arranged on white cloth, and some of the specimens are 14 feet in height.

The eastern boundary of the court is marked by a spacious screen containing a series of superb flower paintings by Mrs. Rowan, wife of the Danish consul-general at Melbourne.

SOUTH AUSTRALIAN COURT.

At the entrance of the South Australian court is placed a large and tastefully executed marble arch, above which can be seen in gilt letters the names of the chief products of the colony. Huge pyramids of grain attest the progress the colony has made in agriculture, and her display of minerals is magnificent.

South Australia, like Queensland, is very proud of her precious stones, and while many of them are said not to be of any commercial value, they are certainly attractive enough to draw around them a vast throng of enthusiastic admirers.

The South Australians also show a fondness for architectural and scenic paintings, and their success thus far in this direction is remarkable for so young a community. Among the most prominent of these paintings are a series of large canvases showing the progress the colony has made in so short a period, from the early life of the pioneers in the midst of a barren waste, surrounded by black fellows spearing fish, to the present high state of civilization exhibited in the construction of her many beautiful towns and cities.

NEW ZEALAND COURT.

The New Zealand court is one of the best arranged and most attractive in the exhibition. Her commissioners evidently have had much experience in preparing articles for display. Her products are, with few exceptions, similar to those of the other colonies. Her exhibits of kauri, pine and gum, flax and ferns are, however, peculiar to New Zealand, and are not found elsewhere.

THE AMERICAN COURT.

This report is now so much longer than I intended to make it that I shall be compelled to make only a brief reference to the various foreign courts. That of Great Britain takes up the largest space, and contains by far the greatest number of articles. Germany is next, and then comes the United States, France, Belgium, and other countries.

The American exhibits, while not so numerous as those of Great Britain, are far superior to them in novelty and originality. There was so much delay in the appointment of the United States commission that many of the articles were not placed in the court, but were scattered in various parts of the building, as, for instance, some of the principal watch companies, like the Elgin, Illinois, and American Watch Company, of Waltham, Mass., are outside of the court altogether, but their exhibits are unquestionably more complete and more tastefully arranged than those of the English, German, and other companies. The truth is, the American watches are not only better, but cheaper than any others, and are made with such exactitude that the parts of all watches of the same class are interchangeable. The rich and elaborate cases of the American watches were much admired, and some of the specimens of enameling are so exquisitely wrought that it would be difficult to find anything superior to them.

Almost immediately after the American commissioners arrived order was brought out of chaos, and splendid arches and costly edifices were erected as if by the hand of enchantment. The space occupied by the United States court was nearly 90,000 square feet, and it is interesting to note that out of a total of 330 American exhibits no fewer than 214 received awards, and 110 of them were of the first order of merit.

Much regret was expressed at the absence of Edison's phonograph, but that instrument, at the time of the opening of the exhibition, had not then reached its present perfection.

Messrs. Parke & Lacy, of San Francisco, have an exhibit of machinery which attracted no small amount of attention, and especially their ore-dressing appliances.

What surprised me more than anything else was the very large number of exhibits from San Francisco. Indeed, it seemed that more prominence was given to them than to the exhibits from the cities of the Atlantic coast. Charles M. Plum & Co. had a superb display of upholstered furniture. The exhibit of the Antissel Piano Company attracted universal attention. The patent tuning device belonging to their instruments give them an immense advantage over those of the German, French, and other European manufacturers.

The Risdon Iron and Locomotive Works had a fine display of mining machinery, among which was the Bryan roller quartz mill, made at the company's works in San Francisco. This invaluable machine is the invention of Mr. J. M. Bryan, and possesses many advantages over other mills, from the fact that it requires less power and less attention to drive it, and has few parts to get out of order. The only pieces it is ever necessary to replace are the

steel tires and dies, which can be renewed at small cost and without stopping the mill. These mills are used not only in California, but in Idaho, Montana, Colorado, and other States of the Union. J. Everding & Co., of San Francisco, have a fine exhibit of laundry machinery and a new kind of granulated soap made without grease, resin, or potash. The Union Box Company, of San Francisco, has a large supply of their manufactures. There were many other California houses represented, all of which will be duly mentioned in the various reports of the exhibition.

Among the most tastefully arranged exhibits are those of the leading tobacco factories of the United States. The success of the American exhibits will unquestionably result in a decided increase in the trade relations between the two countries.

A Pullman railway car attracted much attention, and, although an American invention, was made in London to illustrate the skill of British artisans. It cost a world of trouble to get the car to the exhibition. It arrived on the steamer *Wicannia* in the month of September. It was placed in a case said to be the largest packing-case ever made, the whole weighing 17 tons. It was carried on the deck of the steamer. On the arrival of the vessel at the Williamtown railway pier the case was put on a bogie truck. Careful measurements of the viaduct under which the train passes were made and it was found that the package was 20 inches too high. It was lifted off and placed on lower trucks and an attempt was made to bring it to Melbourne, but on its arrival at Thompson street viaduct, which is a half-mile from the pier, it was unable to go under it. The case was then run back to the pier and Mr. Cameron, the yard locomotive foreman, removed the springs of the truck and let the car rest on the axles, which at last brought it within the prescribed limits.

The attendance at Melbourne is said to have been larger than at any other exhibition in the world in proportion to the number of people in the country. The total attendance during the time the exhibition was open was 2,168,192, a remarkable number for so small a community. There were only 10,000,000 people that visited the exhibition at Philadelphia, and the population of the United States is fully sixty times greater than that of Victoria. The largest attendance at the Melbourne Exhibition in any one day was on the 6th of November, when the number reached 34,767.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Sydney, New South Wales.

PROTECTION TO SILK CULTURE IN FRANCE.

REPORT BY CONSUL MASON, OF MARSEILLES.

On the 28th of last month there was held at Avignon a congress of delegates representing the agriculture, and especially the silk-growing industry, of southern France. The proceedings began with an address by M. Béranger, senator for the department of Drôme and president of the syndicate of sericulturists, in which the speaker stated with great earnestness the principal motive of the convention and the circumstances which have led to the important movement which was then and there to be inaugurated. This was declared to be the organization of the syndicate in support of two measures: First, to demand of the national assembly a protective duty upon imported cocoons and raw silks, with certain restrictions upon silk manufacturers in respect to "charging" their goods in the process of dyeing, and secondly, to adopt measures to rouse and unite public opinion against the renewal of the existing commercial treaties with Great Britain, Spain, Germany, and other European countries, which will expire by limitation in 1892.

It is broadly asserted by silk growers in this country that the future existence of their industry—once so important and flourishing, now so languishing and unprofitable—will depend upon the success of these two measures, and the result of the efforts now inaugurated is likely to have so important an influence upon the silk markets and manufactures of the world that the subject would seem to assume henceforth an obvious international interest.

A brief sketch of the history and present condition of silk culture in this country will show the basis and outlines of the present controversy. The cultivation of the mulberry tree for the rearing of silk worms began in the south of France early in the seventeenth century, but it was not until a hundred and fifty years later that the industry became important or largely profitable. By the year 1780 the annual product of cocoons had risen to 6,600,000 kilograms (1 kilogram = 2.204 pounds), which were then worth 50 cents per kilogram. This was a lucrative result in those frugal times, and the business flourished increasingly until 1853, when the crop reached 26,000,000 kilograms, at 4.50 francs (or 90 cents) per kilogram, thus in a single season adding 117,000,000 francs to the wealth of the rural classes. The country was admirably adapted to growing the mulberry leaf, the warm, dry climate of Provence and Comtat-Venaissin was favorable for the delicate insects, the labor of raising the cocoons and reeling them could be performed by women, aided to some extent by children and aged people, thus entailing scarcely any increase in the expenses of the farm, and the permanent prosperity of the industry seemed for a time assured.

Then a series of disasters began. The peasants, in their eagerness to raise every possible silk-worm that they could feed, had for years overstocked their narrow premises, and in the crowded, ill-ventilated, and often dirty and neglected "magnaneries," the worms degenerated from year to year until they

became a prey to several new and destructive diseases. The most important of these were the *muscardine*, which was thought to have been imported with silk-worm eggs from Turkey, and the *pébrine*, a malignant cryptogamous infection generated by the conditions above cited, and which is commonly known in France as "la maladie."

The *muscardine* caused a loss of 20,000,000 francs in a single season. In thousands of cases every silk-worm in a farm-house or breeding establishment perished. But its obvious remedies were ventilation, cleanliness, and good feeding, and these being generally applied the disease soon diminished, only to be succeeded by the *pébrine*, which swept the silk-growing district irresistibly until the eminent savant M. Pasteur came to the rescue with a timely discovery, which, while not a remedy for the disease, provided a practical escape from its ravages.

This discovery was a new and certain method of detecting the disease in the chrysalis or moth which lays the eggs that serve as the seed for next year's growth of silk-worms. Careful observation at the proper season thus enabled the sericulturist to pick out and destroy the infected moths, so that with fumigation and scrupulous care the health of the establishment could be measurably, if not wholly, restored. But by the time (1880–'81) that this remedy was generally known and practiced the situation had become in other respects almost hopeless.

After the war of 1871 wages and the cost of living had greatly increased. Selling prices for farm produce of all kinds, which had formerly been ample, were no longer sufficient in many instances to pay the cost of production. The price of cocoons, which at one time had been as high as 8 francs per kilogram, fell to 6 and then to 4 francs and even less. Discouraged by diseases and low prices, thousands of farmers rooted up their mulberry trees for fire-wood and devoted the ground to vines and other forms of culture. The skilled women, who had formerly gathered the leaves for the silk-worms and reeled the cocoons, had gone to other employment at higher wages than the languishing silk industry could afford to pay.

To replant the trees and bring them to a productive condition would require eight or ten years of profitless work and waiting, and there was nothing in the situation or prospect to encourage any one to make such a sacrifice, even if he were able and willing to do so, for the worst and most discouraging fact was that French manufacturers no longer depended upon home-grown silk. During recent years important discoveries in the chemistry of silk manufacture had enabled the spinners, by skillful dyeing and "loading" their goods with gums and mordants, to use inferior grades of Japanese, Chinese, and Italian fiber in place of the superior trams and organzines which had given the fabrics of Lyons and the ribbons of Saint Etienne their luster and renown. The manufacturers were protected by high import duties, but the raw material which fed their looms was, and still remains, duty free. The spinners were wealthy, united, and powerful; the cocoon growers were unprotected, and, as they now state it, "naked to their enemies." If

from time to time a deputy from Vaucluse, or Ardéche, or the Drôme would venture to portray before the Chambers the ruin and despair of his constituents and appeal for some measure of relief, there was always some eloquent representative of the silk weavers ready to crush any such proposition by parading the statistics of manufacture. The silk manufacturers of France, he would say, employed 400,000 workmen and turned out a yearly product worth $100,000,000, of which $70,000,000 was sold to foreign countries. It would never do to interfere with a magnificent industry like that, simply to favor a hundred and thirty thousand silk-growing peasants, who were always wanting a higher price for their cocoons than the trade could afford to pay. And so the door was left open.

But within a year or two past a strong reaction in public opinion has greatly changed the practical aspects of this question. The weighting and charging of French silks has been carried to an extent which has injured their reputation, and not only disgusted French consumers of such goods, but has raised the question whether the use of so much low-grade Asiatic fiber has been after all a blessing to the manufacturers of this country. And then it has occurred to some one to figure out and publish the balance-sheet of their vast industry. It is true that in 1887 500,000,000 francs' worth of silk goods were made, of which 350,000,000 francs' worth were exported, but, on the other hand, 283,743,000 francs were paid during the same year for raw silk imported from abroad, leaving only 216,257,000 francs for labor, dyeing, profits, etc. An industry which begins by paying abroad for raw material nearly three-fifths of the entire value of its finished product, when a large share of that raw material might, under a wiser system, be grown at home, did not appear, on closer examination, such an unmixed blessing as the public had been taught to suppose. Another incident occurred which served as a suggestion. The lapse of the commercial treaty with Italy, in March of last year, and the bad blood engendered by the failure of negotiations to renew it, led to prohibitory tariffs on both sides, which practically shut off the immense import of raw silk from Italy into France. This had been the source of most of the higher qualities of imported fiber which had supplied the looms of Lyons and Saint Etienne. With all their art there were certain high grades of goods which could not be made from the inferior stuff brought from Japan, China, and India.

There is now a new and steady demand for better material, and the question has arisen: Why not protect the native silk-growers and raise it at home? There is no immediate prospect that the Italian treaty will be renewed, and the agricultural classes of France — the wine-growers, the raisers of wheat, oil, and cattle — have come to see that in future their very existence must depend upon their enjoying a proportion at least of the protection which has long been vouchsafed so liberally to manufacturers. It is the old question which has been so often and widely discussed in our own and other countries. The theorists' dream of free raw materials has been found fatal to the toiling husbandmen in this country, by whose care and labor the better part of such

raw material for French silk manufacture was formerly produced, and public opinion is beginning to see clearly the two sides of this complex question. As Senator Béranger said in his opening address:

The conditions of the debate are becoming constantly more favorable. We shall no longer be overwhelmed with the maze of doctrines and theories which have so long compromised our cause. Free-trade has had its day. The generous aspiration of an ideal world, emancipated by the favor of Heaven from a competition and war, has received from actual facts and experience the most cruel rebuffs. There is no longer a nation, not even the one in which free-trade was born and cradled, which does not now intrench itself behind tariffs to protect its products from foreign competition. To continue this system in the present condition of the world would be a veritable immolation. To maintain it in respect to a single industry while abandoning it for all the others would be an unjustifiable iniquity.

It would thus appear that the protective movement, which was organized at the meeting in Avignon, will be able to take the field with an exceedingly strong and plausible case. It is solely due to the competition of foreign cocoons and the increasing use of low qualities of raw silk loaded with fraudulent dyes that French silk culture has languished since Pasteur's discovery conquered the malady which had threatened its existence. The peasants of France, who hatched more than a million ounces of silk-worm eggs in 1872, used less than a quarter of that quantity in 1886. The Government, which had increased the duties on wheat and cattle, left the sericulturists without protection, and, seeing no hope of relief, many have given up the struggle and either emigrated to South America or flocked to the already overcrowded cities and towns. There are in this consular district six rural departments in which the population is steadily decreasing, and this decadence of agricultural prosperity involves a serious menace to France.

The 136,000 silk-worm growers, who made so poor a numerical showing against the 400,000 operatives mustered by the manufacturers, represent not only themselves, but their families and dependents, nearly or quite 1,000,000 souls. As was reported by Professor Coste, who, in 1882, was sent to the region of Vaucluse and the Drôme at the head of a Government commission to study the condition of the silk-growing industry:

The rearing of silk-worms gives employment to women and children, and to the aged who are incapable of other labor. Upon the profits of the cocoons the whole country depends—the local merchant for his advances to the peasant, the farmer for the wages of his laborers, the land-owner for his taxes, the housewife for the necessities and luxuries of her home. How often this commission has heard the sadly eloquent words: "Ah! if the cocoons were only profitable now as they once were!"

The report continues:

As every one knows, it is silk culture which is the key-stone of the arch of prosperity in all this region. If that is prosperous, all goes well; if that languishes, all goes badly.

Basing its preamble upon facts, from the meaning of which there can be no successful appeal, the congress at Avignon has laid down its platform as follows:

(1) That there shall be inserted in the general tariff an import duty on foreign raw silk and cocoons sufficient to raise the value of domestic cocoons to a price not less than 4 francs per kilogram, which is the minimum limit necessary to rescue French silk culture from utter

extinction. This meeting is of opinion that a duty of 10 per cent. ad valorem on cocoons and a corresponding impost on grèges and all partially manufactured forms will be sufficient for that purpose.

(2) That measures be studied and adopted requiring manufacturers of silk goods to declare the degree of "loading" which their products have received in the process of dyeing.

(3) That the lands now registered as mulberry orchards, but where mulberry trees no longer exist, shall be released from taxation as such.

(4) That lands newly planted with mulberry trees shall be exempted from taxation for a period of ten years.

Whether the reformers will be able to carry all these points is doubtful, but their chances of general success on the main issue are thought to be highly promising. Already one hundred and sixty municipal councils, thirty agricultural societies and syndicates, and twenty-six thousand petitioners, including many persons of high character and influence, have given their adhesion to the movement. They will be re-enforced by the wine-growers, who demand higher duties on foreign wines and dried grapes, and with more or less unanimity by nearly the entire agricultural population, who see no salvation for their interests except through tariff protection against the constantly growing influx of foreign products, grown in newer countries, on cheaper lands, and under conditions against which French agriculture, with its present burdens, can not successfully compete.

The enormous drain upon the wealth of this country caused by the increased importation of food and raw materials, which were formerly produced in a large degree at home, has already caused great uneasiness among the more intelligent economists, and the cause of protection to home industries seems to gather volume and impetus day by day.

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Marseilles, May 28, 1889.

COMMERCE AND INDUSTRIES OF BRAZIL.

REPORT BY CONSUL-GENERAL ARMSTRONG, OF RIO DE JANEIRO.

FINANCIAL SITUATION.

The improvement in the financial situation of Brazil, noted in my last annual report, has since then continued, such at least being the showing of the returns received up to the present date.

The minister of finance, in his report presented to Parliament last May, stated that as far as then known the revenue collected for the eighteen months ending December 31, 1887, amounted to $114,000,000, nearly $10,000,000 more than the estimate made in the budget voted by Parliament. The Government had been authorized to expend during that period the sum of $124,160,999, but, as the whole of this sum was probably a larger amount of money than would actually be required for meeting the current expenses, the minister thought that the deficit for the eighteen months would not exceed $9,000,000, that is, at the rate of $6,000,000 per annum. This is a com-

paratively favorable showing, as in previous years the deficits were much larger, being as follows: 1883–'84, $12,631,970; 1884–'85, $19,463,964; 1885–'86, $13,741,471.

Incomplete returns for the year ended on the 31st of last December show a revenue of $74,923,000, or nearly $200,000 in excess of the budget estimate. Revised returns will probably present a still more favorable showing.

The improved financial situation of the country, in connection with other favorable circumstances, enabled the Government to negotiate last April a foreign loan on very advantageous terms. This loan, amounting nominally to £6,297,300, was issued at 97 per cent. of its nominal value, with interest at the rate of 4½ per cent. per annum. The foreign loans previously negotiated by the Government had been obtained on the following terms:

Year.	Nominal amount.	Issued at—	Interest.
		Per cent.	*Per cent.*
1824	£3,686,200	75	5
1825	1,400,000	85	5
1829	769,200	52	5
1839	414,200	76	5
1843	732,600	85	5
1852	1,040,600	95	4½
1858	1,526,500	95	4½
1859	508,000	100	5
1860	1,373,000	90	4½
1863	3,855,300	88	4½
1865	6,963,600	74	5
1871	3,459,600	89	5
1875	5,301,200	96	5
1883	4,599,600	89	4½
1886	6,431,000	95	5

A comparison of the terms on which these loans were obtained with those of that contracted last April shows that the latter is the most advantageous which Brazil has ever negotiated.

The confidence inspired by the improved financial situation, combined with the less optimistic belief in certain quarters that only the activity caused by liberal expenditures of public money, especially in aid to internal improvements, can carry the country safely through the difficulties and dangers arising from the labor question, has led to an abandonment of the retrenchment policy of the ministry which went out of office in March, 1888. Thus two classes of persons unite in supporting this change of policy—those who make light of the present difficulties, and those who, believing, on the contrary, that the situation is desperate, think that nothing but desperate remedies can save the country.

Accordingly, at its last session, Parliament voted appropriations to the amount of $93,644,330 for the year 1889, besides authorizing the Government to guaranty 6 per cent. interest on capital to be employed in the construction of new railways, whose total length is estimated at from 1,000 to 1,200 miles. The cost of these roads must not exceed $26,000 per mile.

The budget estimate of the revenue for 1889 is $79,488,000, or nearly $5,000,000 more than the estimate for 1888. Should this estimate prove correct, and should the expenditures not exceed the sum authorized, the deficit will be a little over $14,000,000.

According to the most recent information that I have been able to obtain the present indebtedness of Brazil, not deducting the unexpended resources in the hands of the Government (which amount I have not been able to ascertain), is, reduced to United States currency, as follows:

Foreign debt	$138,978,224
Internal debt, funded	237,527,539
Internal debt, floating	140,058,415
Total	516,564,178

On comparing this with the statement contained in my report for 1886 it will be seen that the country's indebtedness has increased since then about $30,000,000. As to the available resources in the hands of the Government, the minister of finance, without stating their amount, declared in Parliament that he would be able, without borrowing money, to meet all current obligations up to the end of this year. In fact, although the sanitary state of the country has entailed upon the public treasury extraordinary expenses to a considerable amount, the Government has recently paid a part of the floating debt.

What most impresses one in studying the financial situation of this country is the wonderful elasticity of its resources, which enables it to bear so well the heavy burdens with which it is weighted. When one part of the country shows signs of exhaustion another comes to the rescue, and not only prevents any permanent decrease in the public revenue, but aids in promoting a gradual increase therein. It is true that this increase is partly due to increased taxation; but even this fact is, in a certain sense, re-assuring, since it shows that Brazil is able to bear burdens which would be intolerable to a country less favored by nature. Whether it is wise to continue to subject its energies to so great a strain is another question, and one which its people and rulers must decide.

THE LABOR QUESTION.

On the 13th of last May slavery was abolished in this Empire. To obtain a correct idea of the effect of this measure it would be necessary to travel in the interior of the country, examine carefully the state of affairs in different localities, and have full and frank intercourse with the people.

Not having had an opportunity to make so thorough an investigation, I can only say that the chief results at present apparent are the loss of a considerable part of the last coffee crop (estimated at about one-third of the whole), the deteriorated quality of the coffee sent to market, the scarcity and high price of provisions, the lack of adequate labor on the plantations for the proper culture and gathering of the next crop of coffee and other products, the uncertainty of obtaining labor in the future, and, in consequence of all

this, a great increase of the discontent that previously existed in some degree among the people.

When the abolition of slavery was declared the planters had begun to gather their coffee, and the freedmen, with some exceptions, seem to have continued in this labor either on the plantations of their former masters or on those of other planters.

It is generally admitted, however, that their work was much less efficient, so that, notwithstanding the additional labor of a large number of newly arrived immigrants, a great deal of coffee was lost and the greater part of that sent to market was so improperly handled as to be of inferior quality. Of the present crop the highest grade of coffee (unwashed) which has come to market in sufficient quantity to be mentioned in the quotations of prices is that known as medium first, which is usually quoted at 30 and 40 per cent. less than that known as superior and fine.

Some efforts were made by the Government and Parliament for the relief of the persons who lost most heavily by the abolition of slavery and to allay the discontent thereby occasioned. A bill was passed by the Chamber of Deputies authorizing the Government to charter banks for lending money on plantations. These banks were to have a total capital not exceeding $16,500,000 and were to be allowed to issue negotiable mortgage bonds, with 5 per cent. interest guarantied by the Government, to the amount of $165,000,000. This bill was passed by the Chamber of Deputies too late in the session for the Senate to take any action thereon.

A bill for the repression of idleness was also introduced in the Chamber of Deputies, but its discussion was not concluded.

A bill for compensating the owners of the emancipated slaves was rejected by the Senate, but the friends of the measure do not consider the rejection as final.

After some months' delay the Government made an agreement with one of the banks of this city by which the latter was to lend the planters of the provinces of Rio de Janeiro, São Paulo, Minas Geraes, and Espirito Santo the maximum sum of $6,600,000 at 6 per cent. interest. Half of the money required for this purpose was to be lent without interest by the Government to the bank. Similar contracts were made for lending money to planters in the northern provinces of the Empire.

IMMIGRATION.

But perhaps the most important measure was that authorizing the Government to expend during the present year the sum of $5,500,000 in promoting immigration. A large current of immigration is what Brazil needs more than anything else in its present precarious situation, and this it seems to be at last in a fair way of obtaining, although it must be remarked that there has been this year considerable discontent among newly arrived immigrants, some of whom have been sent back to Europe at the expense of the Brazilian Government. Notwithstanding this discontent, which in some in-

stances has led to disorderly proceedings requiring the employment of force for their suppression, and notwithstanding, likewise, the bad sanitary state of the country and the unfriendly action of several European Governments, immigrants have continued to come. Last year there were received at this port and Santos 131,268 immigrants, of whom 92,000 settled in the province of São Paulo, now the most prosperous part of the Empire. This number exceeds that of the whole decade of 1865 to 1874, which was only 115,921, and it is almost 60 per cent. of that of the decade of 1875 to 1884, which was 228,407. It is more than double the number of immigrants arrived in 1887 (55,986) and over five times the number of those who arrived in 1886, which was 25,741. In the first quarter of the present year there arrived 43,489. Should this large current of immigration continue to flow into the country it will certainly produce the most beneficial results. In spite of the suffering and discontent which are now observed and which will probably exist for many years, the successful solution of the immigration problem (which, it must be confessed, is still doubtful) can not fail to promote the development of this country's great natural resources, and to lead to the general prosperity of the Brazilian people.

In the discussion, in Parliament, of the immigration appropriation the question arose as to whether any part of it should be applied to assisting Chinese immigration, and the Government having declared that, unless the law expressly required it, no such application would be given to any part of that appropriation, the Senate voted an amendment (in which the Chamber of Deputies concurred) providing that no species of immigration should be excluded from the action of the law.

A bank with a capital of $2,200,000 was organized in this city for the purpose of assisting Chinese immigration. For some reason, however, this bank has never commenced its operations, and I am told that the idea of obtaining Chinese immigrants has been abandoned, at least for the present. Indeed, judging by the result of former attempts, it seems very difficult to obtain immigrants of that nationality. As early as 1855 efforts were made for this purpose, and the American bark *Eliza Anna* arrived in that year with 303 Chinese. In the same year the Government of this country contracted with Messrs. Sampson & Tappan, of Boston, for the introduction of 2,000 Chinese in the space of eighteen months, agreeing to pay £20 a head. In virtue of this contract the American ship *Sarah* arrived in 1856 with 368 Chinese immigrants. Such of these as were employed by planters failed to give satisfaction. No more arrived till 1866, when 312 were received. In 1868 the question was revived, and in 1870 the Government granted certain favors to a firm which proposed to import Chinese laborers. Subsequently a company was organized for this purpose, but failed to accomplish anything. In 1880 the Government sent a special mission to China to negotiate for the removal of the difficulties to Chinese immigration. This mission was only partially successful. Since then the question has been occasionally mooted, Chinese immigration being favored by a certain group of commis-

sion merchants in this city, who hoped that by the introduction of Chinese laborers into this country the abolition of slavery might be effected without injury to production.

Among the planters there is no special partiality for Chinese immigrants, who, on the contrary, are repugnant to many of them as they are to the people of this country in general. What the planters wish is reliable labor of some kind, whether it comes from Europe, Asia, or Africa, and if they sometimes seem to favor Chinese immigrants, it is because they are told that these possess the necessary requisites.

Of the immigrants that now come to Brazil about 80 or 90 per cent. are Italians, and although these are not generally the best of agricultural laborers many of the planters, in default of more suitable labor, are very glad to get them.

BRAZILIAN RAILROADS.

At the close of the year 1887 there were in operation in Brazil 5,222 miles of railroad, of which 1,251 belonged to the General Government, 59 to provincial governments, and 3,912 to companies and individuals. Of the last named, 1,340 miles were built without assistance from the general or provincial governments. The provincial governments aided, either by subsidies or by guarantying interest on the capital invested, in the construction of 972 miles, and the General Government is responsible for interest on the capital invested in 1,600 miles.

At the same time there were in construction 870 miles of railway, of which about 450 miles it is estimated have since been completed, making the total length of the railways in operation in Brazil nearly 5,700 miles.

Nearly one-fourth of the total mileage is in the Province of São Paulo, and it is in this province that railroads are most prosperous. At the close of 1886 there were in the province eight railroads whose total length was 1,124 miles, besides a part of the principal Government road, the D. Pedro II. The cost of building these eight roads was $49,498,000. Up to that time the General Government had expended on them in the form of guarantied interest the sum of $7,364,040, of which $2,473,420 had been repaid. The provincial government had expended $3,752,185, the amount repaid being $234,403. The operating expenses of the eight roads in 1886 were $4,263,-252, and the receipts $8,399.595.

Outside of the province of São Paulo there are few prosperous railroads in the Empire. Of those belonging to the Government the only one that pays a reasonable interest on the capital invested in it is the D. Pedro II. This road, which in 1886 was 463 miles long, had cost up to that time $53,833,000. In that year the operating expenses of the road were $3,534,-082 and the receipts $6,304,983.

On none of the other Government roads were the receipts that year sufficient to pay operating expenses. These expenses amounted to $1,112,370, while the receipts were only $773,450. The cost of these roads, which were at that time 704 miles long, was $48,180,000.

Of the roads receiving Government aid there are some which have drawn from the State in guarantied interest a larger sum than the original cost of construction. These roads, which in 1886 were 1,445 miles long, had cost up to that time $94,113,000. At the close of 1887, when the length of these roads (seventeen in number) was, as has already been stated, 1,600 miles, the companies owning them had received from the Government in guarantied interest the sum of $61,757,828.

From these figures it will be seen that the large increase in the annual expenditures of the Government and, consequently, in the public debt and the burdens of taxation is partly due to the liabilities incurred in promoting the construction of Government and assisted railroads.

On the other hand, it is undoubtedly true that the railroads so constructed have contributed to stimulate production, promote progress, and increase the annual revenue of the Government.

The data of which I have made use in treating of railroads had to be drawn from various sources, there being no single work in which recent and complete information can be obtained. This remark applies with still greater force to the statistics of manufacturing industry in this country.

INDUSTRIES OF BRAZIL.

Tariff for protection.—As is natural in a country so thinly populated, manufacturing industries are yet in their infancy. Nevertheless, those who have pecuniary interests involved therein had sufficient influence to obtain from Parliament at its last session the adoption of a sliding-scale in certain import duties for the protection of Brazilian manufactures, though it would seem that the incidental protection afforded by the very heavy import duties on nearly all kinds of foreign merchandise would have been sufficient to satisfy the most exacting.

In virtue of this sliding-scale, which went into operation on March 1, the following articles now pay not only the duties to which they were already subject, but also an additional tax of 15 per cent. of the same: Leather (not including buckskin and kid), harness, boots and shoes, trunks, boxes, valises, etc., saddles, glue, preserved meats, extract of meat, preserved tongues, preserved fish, preserved fruits, preserved tomatoes, sperm-aceti, stearine, candles, tobacco, perfumery, sideboards, cradles (for children), bidets, billiard tables, chairs, beds, chests of drawers, side tables, frames for bed curtains, lasts, praying stools, wardrobes, dining-room safes, tables, desks, privy seats, toilet-stands, sofas, unclassified cabinet goods, cotton thread for weaving or for lamp and candle wicks, check drills, blankets, ducks and drills, stockings, not classified, brown drills, unbleached domestic, plain checks, ready-made clothing, not classified, woolen thread, plain and ornamental felt, baize, flannels, shawls, scarfs, cloaks, felt hats, broadcloth, cassimeres and cassinets, wrapping-paper, earthen-ware, railroad cars, wheelbarrows, hand-carts, wagon, cart, and carriage bodies, wheeled vehicles of every description, lay-figures, confectionery, and chocolate.

The additional tax is regulated by the fluctuations of sterling exchange, varying as follows: When sterling exchange is between 22½*d.* and 25*d.* per milreis,* this tax is 6 per cent.; when between 25*d.* and 27½*d.*, 15 per cent.; when above 27½*d.*, 20 per cent.

Cotton Factories.—The most important manufacturing industry in Brazil is that of cotton fabrics, there being, it is said, about one hundred factories of these fabrics in the Empire.

These factories, when properly situated and well managed, should not fail to prosper, as there are many circumstances that favor them. There are in this Empire vast tracts of land admirably adapted to the production of the raw material, which, in fact, is produced in abundance. The consumption of the fabrics manufactured therefrom is larger than that of any other class of manufactured goods.

The exportation of the raw material is expensive, as it has to pass through several hands and pay heavy tribute in the form of commissions or intermediary profits, freights, export duties, and other burdens to which it is subject. The importation of the manufactured article is burdened, in turn, with heavy expenses of the same kind, including very high import duties.

All these expenses give the Brazilian manufacturer a wide margin for profit, even after taking into account the difference between the cost of manufacturing here and that in countries where labor, capital, machinery, etc., are cheaper.

If some of the cotton factories in Brazil have failed to prosper, this is due to incompetent administration or improper location. As a general rule, the factories which are most successful are those that are not organized on too large a scale and are situated in the midst of cotton-producing distri ts. Of the cotton factories in this Empire twenty are in the province of Minas Geraes, twelve in that of São Paulo, fifteen in the city and province of Rio de Janeiro, and the rest disseminated through the other provinces. The largest is the Brazil Industrial Factory, at a place called Macacos, in the province of Rio de Janeiro. This factory has eight hundred looms and employs five hundred operatives. The capital of the company that owns it is about $1,650,000. The shares are quoted at some 15 per cent. below par. The company, which is in debt, has issued debentures to the amount of $550,000, on which it pays interest to the amount of $19,000 every six months.

Another large factory is the Petropolitana, which is also in the province of Rio de Janeiro. The capital of the company is $1,100,000, which it has resolved to increase to double that sum. It has recently enlarged its plant, which is now valued at over $3,500,000. It has issued debentures to the amount of $1,100,000, and has a floating debt of about $1,200,000. Its receipts last year amounted to $184,242 and its expenses to $117,806, including loss by bad debts and interest on its indebtedness.

The Rink Factory in this city (so called from occupying a building originally used as a skating-rink), in which is invested a capital of nearly

* Brazilian milreis = 54.6 cents American.

$800,000, employs four hundred workmen and produces an annual average of 1,300,000 yards of cotton goods, 220,000 of woolen goods, and 65,000 of felt.

Beer breweries.—A very important manufacturing industry in this country is that of beer. In the city of Rio de Janeiro there are forty-two breweries and agencies of provincial breweries. One of the largest of them is that of Mr. F. G. Lindschied, at Petropolis, which produces annually over 600,000 gallons.

Artificial wines.—The manufacture of artificial wines and other beverages is practiced here on a pretty large scale, and is said to be, in general, a very lucrative business. Many of the establishments engaged in this industry are combined with breweries, or manufacture vinegar, liquors, sirups, perfumeries, toilet-soap, and other articles.

Grape wine.—Some grape wine is made in the Empire, especially in the provinces of Rio Grande do Sul, São Paulo, and Minas Geraes.

Oil factories.—There are many factories of different kinds of oil. The cotton-seed oil factory in this city has not, I am told, proved a pecuniary success.

Chandleries.—Quite an old establishment is the stearine candle factory in this city. The capital invested in it is $400,000 and its annual production is estimated at $750,000, including, besides candles, soap and glycerine. It exports to Europe about 100 tons of glycerine a year. It employs one hundred operatives. There are many soap and tallow-candle factories in the Empire.

Dried beef.—In Rio Grande do Sul there are large establishments for the preparation of dried beef, an important article of food in this country, especially among the poorer classes. This industry is said to be on the decline, as the Brazilian establishments are unable to compete successfully with those of the River Plate countries. There is now organizing in the province a company for preparing frozen meat and shipping it to other parts of the Empire, in some of which the present supply of fresh meat is totally insufficient.

Lard factories.—There are several lard factories in the Empire, and their product competes with our lard in the markets of the country, being sold at about 30 per cent. less. One of these factories has been closed for several years, not having been operated successfully. One established in the province of São Paulo, with improved machinery imported from the United States, is said to be doing well.

American lard is preferred to the native article, but the greater cheapness of the latter, of course, promotes its consumption.

Butter and cheese.—Several butter factories have been established in the last ten or twelve years. I am told that the article produced is of an inferior quality and sells for about half the price of the best French butter, which is the kind preferred by the Brazilian consumer.

There is little domestic manufacture of butter in this country, but that of cheese is of very ancient date and of great importance in the province of Minas Geraes, from which a considerable quantity comes to this market. There is now a tendency to centralize this industry, and several factories have been established. One of these factories, in which a capital of $100,000 is invested, employs one hundred and fifty operatives and make three hundred cheeses a day.

Chocolate factories.—There are in the Empire several chocolate factories, two of which are in this city. Of these one has a capital of $75,000 and the other of half that sum.

Coffee-mills.—There is a number of steam coffee-mills in this country. Those in this city are said to have a capacity for grinding 5,000 tons of coffee per annum.

Flour-mills and American wheat.—Some years ago there was established a flour-mill in this city. It has been recently enlarged, and another enterprise of this kind, belonging to an English company, with a capital of £250,000, has been organized. The mill of this company has a capacity for grinding 216 tons of wheat a day.

The owners of these mills import wheat from the United States, River Plate, Europe, and Australasia. They are endeavoring to stimulate its culture in Brazil by the distribution of seed. At one time a large quantity of wheat was produced in the province of Rio Grande do Sul, which in 1816 exported 226,981 bushels of this product; but in consequence of some disease in the Rio Grande wheat its culture was abandoned, and the mill at Pelotas imports the greater part of the wheat it grinds, though there is a small quantity produced in some of the colonies in the province.

AMERICAN-BRAZILIAN COMMERCIAL TREATY.

In my last annual report I gave my reasons for thinking that the flour-mills in this city would not prove pecuniarily successful. Among those reasons was the belief that a commercial treaty would be negotiated between the United States and Brazil. This belief has been strengthened by the action of the Brazilian Parliament, which, at its last session, authorized the Government to make such a treaty. Indeed, Brazil is at the present time extremely anxious to secure in the United States a permanent and lucrative market for its sugar. Just as American statesmen see that the natural outlet for the surplus products of the United States is to be found in South and Central America, so do Brazilian statesmen regard the United States as the natural market for the coffee and sugar of Brazil. To secure this market they are willing, I am sure, to make liberal concessions. This, at least, is the present feeling. Should the opportunity, however, be neglected, changed circumstances may lead to the prevalence of different ideas.

In fact, my object in preparing this incomplete sketch of the present condition of Brazilian manufactures has partly been to show the importance of availing ourselves of the opportunity which is now offered us if we desire to

extend our commerce by means of treaties. The manufacturing industry of Brazil is still in its infancy, but it is growing every day. Besides the factories I have mentioned there are many others, some prospering and others struggling with difficulties. Among them are foundries and machine-shops, factories of boots, shoes, hats, hosiery, furniture, crockery, glass, paper, canned goods, and other articles. Enterprises have recently been organized for manufacturing cordage, sewing-thread, ribbons, and tape, but are not yet in operation.

As I have already stated, the persons interested in the manufacturing industry of Brazil are already beginning to assert their influence in shaping the legislation of the country. On the other hand, agricultural interests have recently received a severe blow, for which Brazilian legislators are at present somewhat disposed to endeavor to compensate them. But it is to growing influence, and not to waning power, that men usually seek to ally themselves. The present desire to favor agriculture as a compensation for the losses it has suffered may pass away, and in a few years, perhaps, the growing manufacturing interests of this country will have acquired sufficient strength to prevent the negotiation of a commercial treaty modifying Brazilian import duties in exchange for a similar concession for the benefit of any of the great agricultural staples of the country. The population of Brazil, it is true, must continue for a long time to be mainly agricultural; it is not sufficiently dense to engage largely in manufactures. But number is not always strength, and it is no uncommon thing in the history of nations to see a favored few reduce the multitude to the condition of hewers of wood and drawers of water, entirely subservient to the interests of their masters.

I think, then, that we now have an opportunity for extending our trade, by means of commercial treaty, with Brazil.

TRADE AND COMMERCE.

Currency fluctuations.—The year 1888 was comparatively favorable to the importing trade of this city. The exchange market continued to be steady with a constant upward tendency in the value of Brazilian currency, as has been the case in the two preceding years.

Only twice during the year was this tendency interrupted, and then only for a short while. In March there was a slight depression in consequence of the change of ministry, and in May on account of the discussion and passage of the bill abolishing slavery.

For the first time since 1876 the currency of the country has reached its par value, which is 27*d.* per milreis, the fluctuations since 1860 being shown in the following table:

Year.	Market value of 1 milreis in English pence.	Year.	Market value of 1 milreis in English pence.
1860	24½ to 27⅛	1875	26¼ to 28⅛
1861	24⅛ 26¾	1876	23⅛ 27⅛
1862	24¾ 27¾	1877	23 25⅝
1863	26¾ 27⅛	1878	21 24⅛
1864	25⅛ 27¾	1879	19⅛ 23
1865	22⅜ 27¼	1880	19⅞ 24
1866	22 26	1881	20⅛ 23¼
1867	19⅜ 24¾	1882	20⅛ 22
1868	14 20	1883	21 22¼
1869	18 20	1884	19⅝ 22¼
1870	19¾ 24⅜	1885	17⅜ 19½
1871	21⅜ 25⅞	1886	17¾ 22⅝
1872	24¾ 26¾	1887	21½ 23⅜
1873	25⅛ 27⅛	1888	22⅞ 27⅛
1874	24⅜ 26¾		

The downward tendency, which began in 1865, was due to the Paraguayan war, in which Brazil spent about $300,000,000. After the war the currency rapidly rallied, and reached its par value in 1873 and again in 1875 and 1876. Afterwards, in consequence of the financial embarrassments of the country, a depression ensued and continued, with numerous fluctuations, until, through the efforts of the late ministry, the financial condition of the country began to improve, reaching last year its par value. In the present year it has nearly always been above par, and specie is flowing into the country and entering into circulation. During the first quarter of the year the receipts of specie at this port were as follows:

Gold.—Sovereigns, 708,845 from London, 265,000 from Buenos Ayres, 244,350 from Montevideo, and 50,000 from Lisbon; dollars, 47,120 from Montevideo; francs, 260,000 from Montevideo; marks, 4,000 from Hamburg; Brazilian coin, 1,010,264 milreis from Montevideo.

From April 1 to 15 the custom-house duties at this port were paid almost entirely in specie.

At one time sterling exchange was quoted at $28\frac{3}{16}d.$ per milreis, or $1\frac{3}{16}d.$ above par, and, until English sovereigns were declared legal tender, had at no time this year been below par value of the milreis.

The improvement in the value of the currency is due to several causes, among which the most important are the following:

(1) The general improvement in the finances of the Empire.

(2) The combination of foresight and good fortune which has enabled the Government to provide for meeting its obligations at home and abroad without disturbing the money market.

(3) The large coffee crop.

(4) The investment of a considerable amount of foreign capital in Brazilian enterprises.

(5) The withdrawal from circulation of a considerable amount of the paper currency.

Ever since the paper milreis has been quoted above its par value in sterling exchange efforts have been made to induce the Government to declare that, in accordance with certain legislative enactments which have been cited, English sovereigns would be considered legal tender, not only in payment of taxes but also in the payment of debts. These efforts have proved successful, and the Government, after consulting the council of state, has issued an order to that effect. The effect of this measure was, of course, a fall in exchange and a rise in the price of sovereigns. The value of the paper milreis in sterling exchange continues, however, to be almost at par.

It must be noted that the paper currency is not subject to redemption, and, while its present value is equal to that of gold, it does not seem to be the general belief that this will continue to be the case, for 5 per cent. currency bonds are quoted at about 6 per cent. less than 4½ per cent. gold bonds.

National bank law.—In the national bank bill, to which I referred in my last annual report, and which has since become a law, a clause was inserted authorizing banks organized with a specie capital to issue paper money. The law up to the present, however, remains inoperative in consequence, it is said, of the way in which the Government interprets some of its clauses. Many of the existing banks are said to be desirous of reorganizing as banks of issue, but are restrained from doing so by what they consider the too restrictive sense given by the Government to the law.

At a recent meeting of the members of the chamber of commerce of this city it was resolved to petition the Government for a different interpretation of the law. It was also resolved to ask the Government to obtain the necessary authorization for a return to specie payments, and to declare legal tender foreign coins of every country.

IMPORTS AND EXPORTS.

Imports.—Although the year 1888 was favorable to the importing trade of this city and the province of São Paulo, there has been much complaint among the importers in Rio Grande do Sul. This province, on account of the prevalence of smuggling on its frontiers, has for a long time had a special tariff. At the time of the revision of the general tariff, in 1887, that of Rio Grande was also revised. The revised tariff seems to have given a fresh impetus to smuggling, and the detriment thereby resulting to the legitimate importing trade gave rise to the complaints that I have mentioned. In consequence of these complaints the Government has again revised the special tariff. This revision has given satisfaction to importers, but has caused complaints among manufacturers and also among the merchants engaged in business in the frontier towns.

Exports.—The foreign trade of Brazil amounted to $212,816,250 in the year 1886–'87, and that of the port of Rio de Janeiro to $93,881,234.

Official value of the foreign trade of Rio de Janeiro for the 6 months ended December 31, 1887.

Countries.	Imports.	Exports.	Total.
Argentine Republic	$2,124,639.26	$752,072.45	$2,876,711.71
Austria	77,919.47	471,671.27	549,680.74
Belgium	1,629,246.21	445,976.77	2,075,222.98
Cape of Good Hope	.....	333,609.22	333,609.22
Cape Verde Islands	79,084.04	.....	79,084.04
Channel	.....	252,317.56	252,317.56
France	3,806,175.52	1,112,305.56	4,918,481.08
Germany	3,304,824.74	1,470,329.47	4,775,154.21
Great Britain	11,372,477.58	1,527,640.23	12,900,117.81
Indo-China	478,786.31	.....	478,786.31
Italy	290,844.34	354,352.02	645,196.36
New Britain	203,263.96	.....	203,263.96
Portugal	1,846,011.71	273,183.32	2,119,195.03
Russia	.....	5,942.22	5,942.22
Spain	34,142.80	501.40	34,644.20
Sweden	99,157.75	.....	99,157.75
United States	2,228,162.17	14,615,741.80	16,843,903.97
Uruguay	2,919,640.83	290,998.93	3,210,639.76
Other countries	133,457.22	18,197,32	151,654.54
Total	30,627,833.91	21,924,929.54	52,552,763.45

EXPORTS FROM RIO DE JANEIRO TO THE UNITED STATES.

For the year 1888 the exports from Rio de Janeiro amounted, according to the statistics of the custom-house, to $51,617,843. Of this amount $31,907,030, according to the statistics of that department, and $33,703,691.72, according to the records of this consulate-general, as is seen in the following statement, were to the United States:

Quantity and value of the exports from Rio de Janeiro to the United States for the four quarters of the year ended December 31, 1888.

FIRST QUARTER.

Articles.	Quantity.	Value.
Coffee ..... bags...	419,219	$7,384,148.00
India-rubber ..... bales...	133	4,480.62
Seeds ..... cases...	2	183.93
Sundries	.....	34.00
Total	.....	7,388,846.55

SECOND QUARTER.

Coffee ..... bags...	340,295	5,582,466.25
Iron, scrap	.....	1,756.77
Orchids ..... cases...	20	1,492.60
Rose-wood ..... logs...	108	3,935.36
Seeds ..... case...	1	72.44
Tapioca ..... barrels...	10	95.95
Total	.....	5,589,819.97

Quantity and value of exports from Rio de Janeiro to the United States, etc.—Continued.

THIRD QUARTER.

Articles.	Quantity.	Value.
Coffee ..... bags...	672,172	$9,992,584.61
India-rubber ..... bales...	76	2,397.60
Orchids ..... cases...	25	1,427.35
Rose-wood ..... logs...	168	5,753.88
Total	.....	10,002,183.44

FOURTH QUARTER.

Coffee ..... bags...	647,361	10,720,142.56
Guava, preserved ..... cases...	3	40.00
Mica ..... do.....	12	220.00
Rose-wood ..... logs...	67	2,231.45
Sundries	.....	217.75
Total	.....	10,722,851.76
Total, 1887	.....	9,228,541.55
Increase	.....	1,494,310.21

TOTAL FOR YEAR.

Coffee ..... bags...	2,079,047	33,679,341.42
Guava, preserved ..... cases...	3	40.00
India-rubber ..... bales...	209	6,878.22
Iron, scrap	.....	1,756.77
Mica ..... cases...	12	220.00
Orchids ..... do.....	45	2,919.95
Rose-wood ..... logs...	343	11,921.29
Seeds ..... cases...	3	266.37
Tapioca ..... barrels...	10	95.95
Sundries	.....	251.75
Total, 1888	.....	33,703,691.72
Total, 1887	.....	29,730,997.66
Increase	.....	3,972,694.06

THE WORLD'S COFFEE SUPPLY.

The principal export from Rio de Janeiro, as is well known, is coffee. The Rio crop for 1888–'89 was estimated at 5,500,000 bags, but in consequence of the causes to which I refer in another part of this report only 3,932,653 bags had come to market up to May 30, it being probable that the receipts from that date to the end of June will not exceed 150,000 bags, making the actual crop less than 4,100,000 bags. The Rio crop for 1887–'88 was 1,910,437 bags. That for 1889–'90 is estimated at 2,500,000 bags, and the Santos crop at 1,500,000. The quantity shipped from Rio de Janeiro in the year 1888 was 3,388,920 bags.

The statistical position of the article is very strong. The total production in all countries for the year 1888–'89 is said to amount to 11,500,000 bags and the total consumption to 11,000,000, leaving a surplus of 500,000

bags, which, added to the stock of 1,742,400 bags in all markets on August 1, 1888, will make 2,242,400 bags. The crop for 1889–'90 in all countries is estimated at 8,500,000 bags. Adding this quantity to the 2,242,400 bags, we have 10,742,400 as the total supply for 1889–'90. As the consumption naturally tends to increase, it follows that the demand will exceed the supply and that prices will go up.

During the year 1888 prices in this market ranged from 28 to 35 per cent. less than in the previous year, the decline being due to the deterioration in the quality of the article, to the large crop of 1888–'89, and to the enhanced value of the currency, which was worth from 8 to 20 per cent. more than in 1887.

IMPORTS AND PRICES AT RIO DE JANEIRO.

Complete statistics of the import trade of this market for the year 1888 have not yet been made public. It appears that this trade was comparatively large, there being, in fact, a tendency — which still continues — to overtrading, induced, no doubt, by the favorable state of the exchange market. In the most important branch of trade, that of dry goods, the receipts were considerably larger than in the previous year, the number of packages imported being 67,828 in 1888 against 60,877 in 1887. The receipts and prices of some of the principal articles imported from the United States were as follows:

Flour.—Receipts from the United States, in barrels: From Baltimore, 188,080; Richmond, 47,248; western interior, 32,330; total, 267,658, against 328,804 barrels in 1887 and 307,625 in 1886. The extreme quotations per barrel were as follows:

Brand.	1886.	1887.	1888.
Richmond	$6.30 to $8.77	$5.50 to $7.70	$4.50 to $11.72
Baltimore	5.51 8.77	5.94 7.44	5.65 12.00
Western interior	5.40 7.65	4.84 7.40	4.95 11.72

From other countries there were imported 92,540 barrels of flour. The quantity of wheat imported was 14,000 tons.

Kerosene.—Receipts from the United States, 340,215 10-gallon cases, against 322,160 in 1887 and 318,250 in 1886. Extreme quotations: 1886, $2.76 to $3.25 per case; 1887, $2.32 to $2.81 per case; 1888, $2.90 to $4.09 per case.

Lard.—Receipts from the United States, 35,833 kegs and 270 cases, against 51,677 kegs and 52 cases in 1887 and 52,629 kegs and 49 cases in 1886. Extreme quotations: 1886, 14½ to 16¾ cents per pound; 1887, 15 to 17⅝ cents per pound; 1888, 16 to 21½ cents per pound.

Pine.—Receipts from the United States, 10,846,199 feet in 1888, against 19,154,144 feet in 1887 and 11,055,490 feet in 1886. Extreme quotations: Pitch pine, 1886, $16.65 to $19.12 per dozen; 1887, $7.92 to $17.60; 1888, $15.30 to $24.43. White pine, per foot: 1886, from 4¼ to 5 cents; 1887, from 4½ to 5½ cents; 1888, from 4½ to 6 cents.

Resin.—Receipts from the United States, 10,766 barrels, against 4,970 in 1887 and 15,287 in 1886. Extreme quotations: 1886, $2.47 to $5.17 per barrel; 1887, $2.42 to $5.06; 1888, $2.70 to $6.

Turpentine.—Receipts from the United States, 5,897 cases, against 4,754 in 1887 and 5,641 in 1886. Extreme quotations: 1886, 8½ to 11½ cents per pound; 1887, 7¼ to 9 cents; 1888, 8½ to 12⅜ cents.

TRADE BETWEEN BRAZIL AND THE UNITED STATES.

In my different reports I have made numerous suggestions in regard to the means of promoting trade between Brazil and the United States. I am glad to see some of those suggestions embodied in a programme recently adopted at a meeting of merchants in New York for the promotion of trade with Mexico, Central and South America, the West Indies, and the Philippine Islands. Finding it expedient to repeat these suggestions, I think that I can not do so in a better way than by quoting the following part of the said programme:

We propose to promote in every way in our power the enlargement of the trade between this country and the Central and South American countries and the West India Islands; to furnish to manufacturers all over the country who join us such information regarding the requirements of those countries as we possess, and to obtain for them, through our correspondents in the various places, such special information and samples as they may apply for, free of charge, if possible, or merely at the actual cost of procuring the same; in fact, to organize a bureau of information for the benefit of our merchants and manufacturers interested in the trade of the adjacent countries; to enlighten the people of this country as to the desirability of studying the wants and requirements of our neighbors, and to do away with what seems to be the prevalent idea of our people—that what is good enough for us must necessarily be good enough for others.

If you want to send your goods to foreign markets you must make what those markets require, and after you have shown them that you can make what they consider best better than they can themselves, they may be persuaded to believe that you know what they want better than they do themselves. But first you must show them that you know how to make what they want now.

Our object is to bring about the establishment of regular, frequent, and speedy communication with these ports in American-built steam-ships worthy of the flag they carry—ships that in themselves will serve as exponents of our capability as mechanics and manufacturers.

In presenting this programme Mr. W. H. T. Hughes, vice-president of the association, made, among other remarks, the following:

The importance of the matter we have in hand is far greater than most people imagine. It is of paramount importance to the whole people of the United States. We must have a market for our surplus products, for, large as our population is, we can to-day produce more than it can consume, and what we propose to do is simply to find a market for these surplus products. Our manufacturers have, with few exceptions, been patiently waiting for years for the mountain to come to Mohammed. Now, gentlemen, as the mountain has not come to Mohammed, we will, if you will join us and aid us, endeavor to lead Mohammed (who, in this instance, is our manufacturer) to the mountains of customers that we feel sure we can find for him.

To this I will add: The Brazilian mountain is certainly showing a disposition to meet Mohammed at least half-way. The Government of Brazil is already paying a subsidy to an American line of steamers, and it offers us a commercial treaty which, I feel sure, will prove to be the thin end of the wedge for opening to us the whole trade of South America.

The new association, then, begins its existence under favorable auspices. It is my earnest desire that these may not prove fallacious, and that the "commercial union" may be efficaciously aided in its useful task, so that its praiseworthy efforts to extend our trade may meet with the success which they most certainly deserve.

H. CLAY ARMSTRONG,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Rio de Janeiro, June 1, 1889.

PACKING GOODS FOR CENTRAL AMERICA.

REPORT BY CONSUL HERRING, OF TEGUCIGALPA, HONDURAS.

The following leader from the Honduras Progress, of a recent date, on the subject of "packing goods for Honduras," will, I feel sure, interest the exporters of the United States:

PACKING GOODS FOR HONDURAS.

The general complaint of our merchants who deal with American firms is chiefly directed against the inferior mode with which American goods destined to Honduras are packed in the United States. Often the packing is done in a careless and insufficient manner, but still more frequently the boxes containing the goods are too heavy and too bulky.

It must be remembered by the American merchants that the original cost of goods is nearly doubled after their arrival in Honduras, the additional 100 per cent. being added by freight, custom duties, and exchange.

Any superfluous weight in the packing will increase freight and duties, as the customs officers take the gross weight of the merchandise as their basis for estimating duties.

We publish hereby a letter from the Times-Democrat, of New Orleans, which communication in general is correct, but decidedly wrong in recommending packages of 50 pounds each, as it would increase the expenses of freight, customs, and packing. One hundred pounds up to 125 pounds for each package can be handled with ease on the pack-saddle, and no need for any further division of goods and packages is required:

"Permit me to call your attention to a fact in connection with the subject of packing goods destined for the South American and similar markets. It is not alone absolutely necessary that goods should be packed securely in strong boxes or bales, the matter of the weight of each package is of even more consequence. Go to the merchant's storehouse in one of these markets and you will find the master of a pack-train quickly accepting an invoice of German goods at reasonable rates. The next will demur at an English invoice, but finally accept the job at greatly increased price. In many instances the American invoice will not be accepted at all at any price. It must be repacked before it can be shipped, and this not necessarily because it has not been packed in strong boxes or bales. The invoice is rejected by the packer simply because of the weight or bulk of the package.

"The average load for a pack-mule is 200 pounds, exclusive of the pack-saddle, which weighs about 60 pounds, and the maximum load which a packer can be expected to accept is about 240 pounds. This means that the average package of goods should never exceed 100 pounds in weight, nor the heaviest under any circumstance 120 pounds. This to secure proper loads for the pack-mules. As packers are by no means given to a liking for any unnecessary or hard labor, another factor of perhaps even greater importance is introduced. It must be remembered that each package of goods must be handled morning and night by the packers. Heavy ones make his labor not only more difficult but slower; consequently, whenever practicable, the above weights should always be subdivided at least once, viz: Goods intended for shipment by pack-train should be put up in packages of 50 pounds weight, and never exceed 60 pounds, when practicable. Get your patrons interested to paste this rule in their hats and never fail to act upon it, and you will see a marvelous change in their business.

"Although the matter of proper weights is of first importance the shape is also a matter of consequence. The boxes or bales must be of such dimensions as to permit of such number as constitutes a load being formed into a good and secure pack, one that will not interfere with the movements of the mule, nor readily shift or become loose.

"It goes without saying that the packages must be so put up as to insure security for their contents from the roughest handling—a tired packer at the close of a day's march does not let down a box gently, be assured—and must be secure from weather—water-proof. The bales must be such that the constant strain and chafing of the lashing-rope will not tear or wear out the covering.

"As transporting goods by pack-train is of the most expensive character, it is hardly necessary to point out that not only must such goods be securely packed, but the packing-boxes, etc., must be the lightest possible consistent with strength and security. Strong they must be, otherwise the strain of the lashing-rope will crush them. Could your patrons once see a mule 'packed' the importance of these suggestions would at once become apparent. No doubt they would consider it a most cruel operation, but a loose pack is far more harmful to the animal than the strain put upon the rope by a couple of stout packers.

"A merchant who will not ship his goods in such shape as to invite the approval of the mule packers will never do a successful business in these countries. One who will ship them in compact packages which will permit of rough handling or of being transported through sun or rain without damage will always find a willing packer at the most reasonable charges, all of which, it is taken, means profit, 'business.'"

American merchants and manufacturers will find profit in studying these and other peculiarities of Central American trade. Over good roads, easy in grades, smooth, and dry, each mule may be required to carry 250 pounds, and in rare cases 300 pounds; but 300 pounds is the heaviest burden put on animals here. When the trails are rough, mountainous, or muddy the maximum limit of weight for a cargo is 200 pounds, and this should be divided into two packages, as nearly as possible alike in size, shape, and weight, so as to be slung over the albarda, or native pack-saddle, and rest on each side of the mule. If the package is of awkward shape and weighs over 150 pounds, it is packed on top of the albarda, and sways to and fro, to the great fatigue of the animal, making his back sore and endangering the package from overhanging limbs. Consequently the carrier will not take such a package as long as he can find others more desirable, and will charge much higher for it than the regular package. To the weight of the cargo that of the albarda adds 20 or 25 pounds. The cover to shelter from rain adds 4 to 6 pounds more, making the whole weight of the load 225 or 235 pounds. No package should

weigh over 125 pounds if going over a good trail, or more than 100 pounds when there is no certainty that the road will be smooth, level, and dry. The best rule is to limit the weight in all cases to 100 pounds, including casing or box.

Duties in Honduras are charged by the weight of the imports, boxes, barrels, sacks, or other casing included. It is easy to see how the shipper of goods to this country may increase the amount of duties and freight charges on a consignment, without adding to the profits of the importer or strengthening the inclination of the buyer to increase his orders.

As Honduras is blessed with an abundant supply of native pine of good quality her merchants are not very desirous of importing pine lumber and paying duty and carrying charges thereon at the rates charged for fine and valuable silks and satins.

Boxes should be made of some thin, tough lumber, such as elm would make, and should snugly fit the goods they inclose, or be stuffed full in the vacant places around the article shipped with some light material, or so braced that they will resist the crushing tendency of the lassos or ropes used for lashing the cargo to the albarda.

Coal-oil should be shipped in zinc cans. When shipped in tin it is not only too much wasted by evaporation, but the cans are very liable to breakage by rough handling or to be punctured by nails, rocks, etc. In consequence of the coal-oil being shipped here in tin, the merchants are forced to charge what seems exorbitant prices for it. The import duty is 2 cents per pound, and coal-oil sells here at $1.25 to $1.50 per gallon. Here coal-oil lights are the only kind used. The towns and cities are lighted by coal-oil. These statements indicate that there is big profit here for some enterprising man who understands the facts even on this single article.

The habit of charging enormous percentage on first cost extends unreasonably to the smallest articles. For example, a bottle of ink, worth 5 cents in the United States, sells readily here for 25 cents; a pair of socks, worth 10 cents in the States, sells here for 75 cents; ready-made white linen shirts sell here for $3 each; corset whale-bones, 10 cents apiece; an ordinary sheet of letter-paper, 2 cents; sulphur, 75 cents per pound; quinine, $4 per ounce, etc.

Here, as in most places in Central America, a long time must necessarily intervene between the sending of an order for goods and their receipt. If they arrive at the port in the wet season, they are likely to lie there for weeks, perhaps even months, before mules can be obtained to carry them to the merchants in the interior, especially if the packages are of bulky, heavy, or inconvenient shape. Instances have occurred where consignments of goods of awkward shape have lain in Amapala more than a year awaiting transportation. Six months may probably elapse between the mailing of an order for goods from New York and their receipt, say at Juticalpa, for instance. These facts serve to show why merchants here and in other portions of Central America require long credits. These credits they get from English, German,

and French houses; but they find American houses less willing to give equally favorable terms. If a merchant here fails to remit a payment when due, it may require three or four months of correspondence for the foreign house to ascertain the reason. It may be on account of some delay, missending, miscarrying, or unknown stoppage in transit of the natural products of this country, which are often sent in exchange for foreign goods. Consequently the interchange of business or commodities is necessarily very slow. Resort to the courts for commercial settlements is rare, and bankruptcies seldom occur. Some English houses charge 5 per cent. per annum interest on accounts until they mature, and then, without further notice to or from the customer, extend the credit three months and charge interest for that three months at the rate of 7½ per cent. per annum, and very often extend the credit a year. Merchants here object to the insurance in the United States as being higher than in Europe, with no corresponding greater risk; in fact, less risk, the distance and time being shorter.

They also insist that there is more adaptability in European goods to this trade. For example, that domestics in the United States are put up in pieces of over 50 yards, whereas in England they are put up in pieces of 24 yards, and I am assured that 75 per cent. more of the latter class can be sold in this market than the former. Also, that they get better assortments in small purchases in Europe; for instance, that the assortments in a case of calicoes or prints from Europe is far better than any from the United States, and especially if the amount purchased is small. One leading merchant tells me that he has decided objections to the form of invoices from the United States; that when he opens account with any European house the invoiced articles sent him commence with No. 1 and continue in regular order of numbers through a series of invoices until his transactions with that house close or are settled for the year; but in the United States every invoice commences with No. 1, and this often creates confusion in accounts.

The foregoing reasons operate to give to the European houses trade that would otherwise go to the United States. The superiority of goods made in the United States is known and recognized here, and this of itself would give to our people a far larger share of the traffic of this country than they now enjoy if advantages, more particularly in credit and packing, offered by European dealers were met with similar advantages by Americans.

D. W. HERRING,
Consul.

UNITED STATES CONSULATE,
Tegucigalpa, Honduras.

PUBLIC ROADS AND TRANSPORTATION IN HONDURAS.

REPORT BY CONSUL HERRING, OF TEGUCIGALPÁ.

Believing that transportation in this country and anything connected therewith can not fail to be of interest to American manufacturers and merchants who are seeking foreign outlets for their surplus goods, I forward herewith a leader from the Honduras Progress on the subject of public roads in Honduras:

PUBLIC ROADS IN HONDURAS.

[From the Honduras Progress of March 15, 1888.]

The subject of public roads is one of first importance, not only in Honduras but in all countries. Without such roads to afford easy and quick communication and transportation there must often be want and suffering in one part of a country, with prices of the necessaries of life placed at an exorbitantly high figure, while at the same time there may be in a place only a few miles away a great abundance of those necessaries seeking buyers at prices so low as to give no profit to the producers. Consumers who live at even a comparatively small distance from the producers must nearly always pay exceedingly high prices for those things which might be produced in great abundance and sold at fair prices, if means existed for transporting the goods easily and cheaply. For example, cheese was worth 2 reals per pound in Campamento a few days ago, and at the same time was selling for 4 reals per pound in Tegucigalpa, 70 to 80 miles from Campamento. Over a good wagon road 3,000 pounds of freight might be hauled that distance in three to four days. At a charge of 2 reals per pound, the difference between the selling values of cheese in the two places, the pay for handling one wagon-load would have been $750. This is not an extreme, nor is it an isolated instance. At the time mentioned there was a difference of 100 per cent. between the price of coffee, maize, and sugar in Campamento and other interior towns and the value of the same articles in Tegucigalpa.

When the merchant of the interior wishes to send a cargo of hides, coffee, sugar, or other products of the country to market he must hunt up mules, men, provisions, and trappings for the trip. Two or three weeks are often spent in doing this. Sometimes the merchant contracts with some man, who agrees to do all this preliminary work and to deliver the cargoes safely at their destination. If the season is one in which pack animals are in strong demand, a month may pass between the time when the search for men and animals begins and that moment when the laden train files away from the door of the shipper, to plod tediously along, day after day for two or three weeks, until the sea is reached.

The average load for a mule is 200 pounds; that for an ordinary wagon may be put at 3,000 pounds. Thus fifteen mules are required for the transportation of one wagon-load. An average day's journey for a pack train is from 10 to 18 miles; a wagon would go 18 to 20 miles in the same time. The work of a train of fifteen mules for a day would be equal to moving 36,000 to 48,000 pounds one mile; that of a wagon to moving 75,000 to 90,000 pounds the same distance in the like period. The cost of transportation by mules over the present trails can never be much less than it has been, but the lowering of grades and widening and smoothing of the roads will make it easy for a mule to carry larger loads, and carry them farther in a day than is now possible. The cost of transportation can be reduced greatly by the establishment of lines of freight wagons running over well-made and well-maintained wagon roads giving access to the ports of the sea-board.

The effect of the establishment of such lines of transportation would be first felt by merchants. Enabled to send produce of the country to the great markets, and to obtain goods

from those markets more quickly and much more cheaply than they can now, they will make greater profits than they now make. By dividing the increase of profits with their customers they will greatly extend their business, and by this gain more than by the old system of big profits and slow sales.

By far the greatest gain to be derived from the construction of good roads comes from the increase in prices which will be paid for the products of the land. Under existing conditions there is no profit in growing grain, or in making sugar, or cheese, or other products in the interior, for cost of transportation and dealers' profits take very nearly all the products sell for. There is no encouragement for the producer. He is wise enough to know that one may about as well do nothing for nothing as to work hard for nothing. The consequence is that of all the rich areas in Honduras which would be marvelously productive of fruits, grains, fibers, and other valuable commodities if used properly very little is planted and none is cultivated. The people have little to sell, and for that little receive so small pay that they have no surplus money with which to buy the comforts of which they are so greatly in need.

Progress in Honduras, not only commercially but in every way, is greatly retarded by lack of facilities for transportation. To remedy this difficulty the Government has been carrying on a work designed to give this Republic a complete system of good wagon roads. The first link in this chain of communication — a broad, smooth road of easy grades — was completed two years ago. It connects Tegucigalpa, a city of about 12,000 inhabitants, with the ports on the Bay of Fonseca, some 90 miles away, and there with the vessels of the Pacific Mail Steam-ship Company, which regularly ply between San Francisco and Panama. This road is of great benefit to the trade of Tegucigalpa, the capital of the Republic, as its affords, for the first time within the period of modern history, means for comparatively easy and cheap transportation of goods from abroad, and of the produce for which these goods are exchanged. Soon after this road was finished another was constructed, connecting Tegucigalpa with the mining camps of the mineral district of Yuscaran, 45 miles distant. Over this new highway the mining companies have hauled large and heavy castings, which could not have been carried over the old trails at a cost within the bounds of reason. Within the last year another wagon road has been completed from Tegucigalpa to the rich Rosario mine, at Sanjuancito, a distance of over 20 miles. And, by the way, a telephone line from Sanjuancito, via Tegucigalpa, to San Lorenzo, on the coast near Amapala, is just finished by the enterprising Americans owning the Rosario mine. Within the last year another wagon road has been constructed by Capt. F. M. Imboden, an American, who built the two first mentioned. This road extends from Tegucigalpa to the city of Comayagua, which was long the capital of the Republic, and is now of all towns in the country only second in size to Tegucigalpa, and is two days' journey away. The intention is to continue this road through the valleys of Comayagua, Espinal, and Sulaco to the terminus of the railroad, at San Pedro Sula, 37 miles south of Puerto Cortés on the north coast. This road is of the highest importance. As far back as 1539, when this country was under Spanish rule, the governor of Honduras addressed a letter to the then emperor of Spain advising the construction of a road over this same way to the Bay of Fonseca and representing that this was the best route that could be obtained for the

transportation of goods and persons from Spain to Peru and other points on the Pacific Ocean. Most of the correspondence with people in the United States and Europe, with British Honduras and the West Indies, passes over this route; and many, if not most, of the visitors from the United States to the seat of government here come by way of this road through Comayagua. One reason for this is found in the fact that the only steamers making trips regularly, on fixed dates, between the United States and the north coast of Honduras run from New Orleans and Puerto Cortés. Another reason is that this route to the north, via Comayagua and Puerto Cortés, is much cheaper and more direct than is any other between Tegucigalpa and points in the States east of the Mississippi, or in Europe. Mail from central cities of the United States, as Chicago, Saint Louis, or Cincinnati, reaches Tegucigalpa in sixteen to twenty days if sent by way of New Orleans and Puerto Cortés, while that sent from New York or San Francisco requires from twenty-one to twenty-six days for its transmission.

It will be seen that this road to Comayagua forms a link in what will be a chain of roads reaching from Puerto Cortés on the north coast, and only 900 miles from New Orleans, to La Brea on the south, some 1,670 miles south of the latitude of San Francisco. Connected with lateral branches to be made through the large and fertile valleys of the Salaco, of the Chamilicon, and the Santa Barbara rivers, this system will not only afford comparatively easy and quick communication between the Atlantic and Pacific ports, but it will also furnish an outlet for the products of three great valleys and of the countless fertile mesas and hill-sides and valley farms, naturally tributary to the large valleys. From Comayagua to Puerto Cortés the road follows the lines selected, after careful survey by American engineers, as a route for an interoceanic railway from Puerto Cortés to Fonseca Bay. From Comayagua to Tegucigalpa the road is a departure from the proposed railway route, but it is evident that there would be little difficulty in constructing a railway where a wagon road of easy grades and curves has been made. Honduraneans and Americans having interests in this country are anxious for this railway to be built. The Government has offered most liberal terms to several parties who have proposed to build such a road. Several contracts have been made for that purpose, but so far nothing has been done in its construction since the completion of the short road of 37 miles from Puerto Cortés to San Pedro, and this is yet the only railroad in this country. The greatest obstacle in the way of this much desired interoceanic railroad is a contract that was made for its construction many years ago with an English company,* who built the 37 miles of road referred to and then abandoned the work, leaving the Government bound for a large debt of bonds issued for the company in the hope that the entire road would be completed under the contract. This railroad debt amounted, with interest, to $32,500,000 in July, 1875, and no part of it has since been paid, and the interest on it has been accumulating at the rate of 10 per cent. per annum. It is believed that

*See CONSULAR REPORTS No. 105, page 172.

this debt is now bought up and held by a few capitalists, principally in London and Paris, and could be compromised or adjusted on very easy terms to be paid at a small per cent. of the face value of the bonds. At any rate, until this obstacle is in some way removed, there seems to be no cause to hope for the construction of this great highway, the advantages of which to Honduras, and, as a transisthmian route, to the whole world, have been clearly made known by Mr. E. G. Squiers, formerly United States chargé d'affaires to Honduras.

MULE TRAINS.

As there are no railroads in Honduras, neither are there yet many wagon roads. The only other one than those mentioned is that which runs from Tegucigalpa via Santa Lucia to Los Angeles, a distance of 27 miles. It is true there are primitive highways, radiating from the larger towns, and extending a short distance, usually from 1 to 3 leagues, and then dwindling into rough cart-tracks, to shrink at last into narrow and tortuous trails, winding among or over hills and mountains, until the traveler is reminded of the road described by Longfellow, that "ended in a squirrel track and ran up a tree." Nor are there yet any regular wagon trains on the wagon roads that are established, though there seems to be reason for believing that by reasonable effort and prudent management such trains might be made to pay richly despite competition from those who own mule trains. To determine any question of this conclusion let those seeking openings for enterprises, or full information of the means and manner of transportation in this country, examine the statements made in the extract from Progress and the facts and figures here following. A cargo train usually consists of from thirty to forty animals, but may have from seventy-five to four hundred, ranging in value from $30 to $40 each, and averaging about $35 each. Good mules, well cared for, last about ten years on the trail, unless accident cuts short their labor. The loss from accident is variously estimated as ranging from 3 to 10 per cent. per annum; probably 5 per cent. would cover the general average loss from this cause. A pack-saddle and accompanying lasso, cincha, and crupper rarely cost more than $5, and the saddle will last about two years, but cinchas, lassos, and cruppers may wear out in a much shorter time. Lassos, used for lashing the cargoes to the saddles, last little if any longer than one month. Covers to protect cargoes from rain must be provided. If of canvas, they cost about $5 each and last about two years, but native freighters use bulls' hides, which last longer, but do not protect the goods as fully as do canvas covers.

When a train is on the road it is attended in good weather by one mozo or arriero for every ten animals. In wet weather one mozo for each five mules is needed. For a trip from Tegucigalpa to La Brea, on the Pacific coast, 90 miles away, the mozos are paid each $3 in dry and $4 to $6 in wet seasons. Besides the arrieros or mozos there is a trustworthy man having charge of all, who receives $10 for the trip mentioned. The owner of the train furnishes food for the men, and, if the pasturage is scanty, also for the animals.

The cost of feeding men on the trail is about 1 real per day. That of feeding the mules ranges from 1 media in the wet season, when grass grows in luxuriant plenty by the wayside, to 4 reals per day when the brown, dried grass has been cropped short and grain and forage must be bought. In the wet season the trip between the two places named occupies ten days, and may require a longer time if rains are so continuous and heavy as to keep the streams so swollen that crossing is impracticable for a long time. In dry weather the trip can be made in five days. When the streams are high two ferryings are necessary; for each of these a charge is made of a media for each cargo. At each end of the route a municipal tax of a media for each mule is collected. There are no data from which to learn the amount of incidental expenses, but there are some on every trip. The other expenses of the freighting business are, interest on investments in animals and outfit, which item never sinks below 12 per cent. and not infrequently rises to 24 per cent. per annum, and the cost of feeding animals while they are in pasture waiting for galled backs and worn-out feet to become serviceable again. Well-cared-for mules require usually one week of each four, but, as ordinarily treated, animals need two weeks of every four to recover from the effects of the work exacted from them. Mules travel from 4 to 8 leagues in a day over good roads in fine weather, and from 1 to 3 leagues where the trails are bad and the weather unfavorable. Not infrequently trains are stopped for the day at the end of two or three hours' travel, because pasturage may be had at the stopping place and at no other spot within 2 or 3 leagues further along the way. A trip from Tegucigalpa to La Brea with a train of fifty mules would, it is evident from the above statements, under favorable conditions, cost about as shown below:

Interest on investment, five to seven days, at 18 per cent. per annum	$5.00	to $8.75
Deterioration of value of stock, five to seven days, at 15 per cent. per annum	4.17	7.29
Interest and deterioration while resting, 1¼ to 1¾ days	2.04	4.01
Wear of trappings, lassos, etc.	2.30	3.14
Maintenance of 50 animals on trail, 1 to 4 reals per diem	3.91	5.47
Food for 6 men, 1 real per diem each	3.75	5.25
Wages of 6 men for the trip	25.00	25.00
Municipal tax, 1 real each cargo	6.25	6.25
Total	83.67	152.66

From the above it will be seen that, making no allowance for incidental expenses, a train of fifty mules moves from 10,000 to 12,000 pounds 90 miles at a cost of $83.67 to $152.66. For this service the carrier charges $3 per cargo, or $150, and makes an apparent profit of $66.33, if he is fortunate enough to be constantly employed during three-fourths of the time and all other conditions are favorable; but if the expenses reach the highest figures given above, he loses $2.66. Assuming that the average cost of his trip will equal $118.16, the mean between the two sums mentioned, the gross profits would be $31.84, or $5.14 per day while on the trail. Counting the time for resting, the average daily profit on an investment of $2,000 to $2,500

seems to be $4.54. In bad weather such a trip may last from ten to fifteen days and cost—

Interest on investment, on trail and while resting	$12.50 to	$23.44
Deterioration of stock on the trail and during rest	10.43	19.52
Wear of trapping, etc	5.47	8.20
Maintenance of 50 animals at 1 media per diem	31.25	46.88
Food for 11 men at 1 real per diem	13.75	20.62
Wages of 11 men for the trip	50.00	70.00
Municipal taxes, 1 real per cargo	6.25	6.25
Ferrying, 1 real per cargo	6.25	6.25
Total	135.90	201.16

In such unfavorable seasons as are considered in the last above estimate the carrier charges $4 to $6 per cargo, or $200 to $250, at which rates his gross gains would be much larger; but incidental expenses are almost sure to be much larger than in other seasons, and must reduce these apparent gains somewhat.

The figures presented above apply to the cost of transportation over excellently finished broad roads, in many places smoothly carved in the sides of mountains of feldspar, or cut through hills of broken basalt. Roads of entirely different character are those leading from the coast towns on the north to the interior of Yoro, Olancho, Santa Barbara, and other departments of Honduras. One of these roads or trails is that between Truxillo, on the north coast, and the city of Juticalpa, naturally the center to which the trade of a large system of valleys in the middle and eastern part of the Republic would flow if facilities for reaching the sea from Juticalpa were provided. Near Truxillo the trail is over mountains, but these are soon passed and the way is then for many leagues through the large and exceedingly fertile valley of the Aguan River. Through this valley a good wagon road may be easily made, but the trail is exceedingly muddy and even impassable for mules with cargoes during the rainy season. When the valley of the Aguan is left the trail becomes tortuous, broken, and in many places very steep. Streams must be frequently forded, and when they are high the train must be unloaded and the goods ferried across in canoes. As most of the streams flow through rocky channels in narrow valleys between high mountains, the crossings are often difficult and sometimes dangerous. The cost of transportation over such trails is greater than when the way leads across high and dry lands. Yet the charges do not seem to be proportionately higher. The usual charge between Truxillo and Juticalpa is $15 per cargo. The distance by the different roads is from 68 to 90 leagues, the average length of the trails being 76 leagues, and the time taken in making the trip from sixteen to twenty days in favorable weather. On these mountainous routes the cost of maintenance of mules is seemingly very little, as grass is usually found in sufficient quantity to support the stock; but the animals usually require as much time to recover from the galls, injuries to feet, and loss of flesh and strength resulting from their toil as they actually give to the journey. Each five animals require an at-

tendant. The cost of such a trip will be in favorable weather about as heavy per diem as on the road between the capital and the coast. A trip with a cargo train over the trails of Honduras would be full of interest, value, and discomfort to any one desirous of building up a trade in a country where the transporting of goods is done by mules carrying packs.

D. W. HERRING,
Consul.

UNITED STATES CONSULATE,
Tegucigalpa, Honduras.

EMIGRATION FROM SPAIN TO SOUTH AMERICA.

REPORT BY CONSUL-GENERAL WILLIAMS, OF HAVANA.

I have the honor to inclose herewith a translation of an editorial published in La Lucia, of this city, on the 20th of November last, entitled "The Dispeoplement of Spain," and occasioned by the considerable number of able-bodied Spaniards now emigrating to Buenos Ayres in preference to the colonies of their own country.

I also send two other inclosures, one taken from the Lucia of April 21 and the other from the La Union Constitucionel, likewise of this city, both relating to the same subject. According to the latter, Count Xequena, the present minister of the interior of Spain, has inquired of the governors of the provinces and of several scientific corporations about the causes of this current of emigration and the means of stopping it. Undoubtedly the reports to be made by these authorities upon this subject to the minister will contain information of a very interesting character.

It has seemed to me for some years past that an economic phenomenon of the character now reported would, in the logical order of events, have to take place in Spain, and I have indicated this belief in several of my dispatches to the Department.

If a proper study of the causes now forcing Spaniards to seek the means of livelihood in distant lands foreign to the dominions of Spain be made, it will be found that one of the most efficient of those causes is the erroneous system of partial or unreciprocal protection practiced by Spain in her sugar islands of the West Indies.

The great diminution that has taken place in the exchangeable value of the exports of Cuba and Porto Rico during the last twenty years is now telling upon the commercial welfare of Spain. Not only has the selling power of these two islands diminished, but Cuba has now a public debt, created within the same period and held mostly in the mother country, which takes from her productions some $11,000,000 to $12,000,000 annually for the payment of interest.

The selling power of these islands having diminished, logically their buying power has correspondingly diminished, and this in turn tells, also correspondingly, upon the interests of the mother country in her agricultural in-

dustries and navigation, because, these islands selling less must consequently buy less. Spain, therefore, and in the same measure, must sell less to the islands. Hence it is the diminishment of employment for the people of Spain that now forces so many of them to seek relief in emigration. Indeed, the decline of industries in all countries has always produced such effects.

RAMON O. WILLIAMS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Havana, May 3, 1889.

[Inclosure No. 1 in Consul-General Williams's report.]

THE DISPEOPLEMENT OF SPAIN.

(From La Lucia, November 28, 1888.)

The emigration of Spaniards to the countries that were once the splendid vice-royalties of the Crown of Castile and are now rich, prosperous, and progressive republics has taken such great and extraordinary proportions that several leading foreign journals have begun to give editorial attention to the subject. Thousands of Spanish emigrants are now crowding into the beautiful regions of South America, giving preference to the Argentine Republic, which promises to become a magnificent emporium of wealth and civilization, to rival even the United States of North America.

According to those journals the steamers leaving the ports of Spain for South America carry thousands of Spaniards, who abandon their country, as it no longer furnishes them the means of earning a living, for others more propitious, where they can find remunerative employment and not run the risk of seeing their wives and children perish from hunger.

Those emigrants leave the mother country and embark for America to flee from an impoverished land, an administration essentially bureaucratic, a monstrous budget an unbearable military service that pursues them even to the colonies, and a devouring and insatiable exchequer that takes all their earnings and has now over four hundred thousand Spanish homes under judicial embargo, a useless Parliament which, by its mystification, never develops the welfare of the nation, a Government always threatened by faction, a present state of things pregnant with troubles, and, in fine, a future veiled in doubt and anxiety.

Spaniards, on abandoning their native country, leave hunger, sorrows, and political convulsions behind, and America smilingly and enchantingly invites them to her shores. But these plain, honest, able-bodied, hard-working men seek new institutions rather than a new country. They go to settle in the virgin forests, upon the majestic pampas, beside the margins of rivers that resemble seas, into umbrageous valleys, and on the mountain slopes, where they can make the homes denied them in arid Castile, in poor Galicia, and in craggy Aragon. They migrate to dwell among young and prosperous nations who know no castes and are not ground down to dust by historic and senseless traditions or decayed secular institutions. The poor, unshod rustic of Spain, transferred to America, soon changes into the citizen of a prosperous Republic.

Our Government and our reactionaries, who endeavor in vain to bring white laborers to the Antilles, should learn that immigrants, in the words of a well-known and timely phrase, are attracted and not brought; that laborers will not come to Cuba so long as a system, already discredited and condemned by the principal colonizing nations, is maintained with such signal and manifest temerity. Why does this current of emigration run from Spain to South America, and not to Cuba and Porto Rico? Plainly because the laborers of the Peninsula well know that the same Government that frightens them from Spain awaits them here. They know that we are also subjected to the same military rule that they detest, to the system of centralized administration which they abominate, to the mania of office-holding which horrified them, and to those enormous budgets that have caused their ruin.

There can be no greater condemnation of the system of government ruling in these Spanish colonies than that which is evidenced by the preference given by our Peninsular countrymen in the fixing of their future homes in foreign countries and in the shunning of the islands of Cuba and Porto Rico.

[Inclosure No. 2 in Consul-General Williams's report.]

EMIGRATION.

(From La Lucia, Havana, April 2, 1889.)

According to official statistics the number of Spaniards who now return to Spain from Cuba and Porto Rico is greater than that which emigrates from Spain to those islands. This fact causes a real alarm both in the Government and in public opinion. The public press accounts for it, saying that the doleful economic and financial situation of Cuba and Porto Rico discourages Spanish emigration.

The number of Spaniards who abandon their native country to emigrate to the Argentine Republic increases daily. Three thousand emigrants have embarked in one day alone in the port of Barcelona for the River Plate countries.

[Inclosure No. 3, in Consul-General Williams's report.]

SPANISH EMIGRATION.

(From La Union Constitucionel, Havana.)

The public press continues to speak of the large number of Spaniards emigrating to Buenos Ayres. The natives of the Biscayan provinces are preferred by the agents of the Argentine Republic. Count Xiguena, the minister of the interior, has requested information from the governors of the provinces and of several scientific corporations about the character and causes of this emigration and the means of stopping it.

A republican deputy will propose to the Cortes that the Spanish Government, in imitation of Buenos Ayres, be authorized to sell the lands of the State at low prices, and to furnish agricultural implements to farmers. It is proposed to lay a heavy tax upon uncultivated lands to oblige proprietors to give employment to agricultural laborers.

[Inclosure No. 4, in Consul-General Williams's report.—Translation.]

THE QUESTION OF THE DAY.*

To the editor of the Diario de la Marina, Havana, Cuba:

SIR: I am going to employ myself in the present letter about a very important matter now preoccupying the attention of all Europe and constituting, as it were, the question of the day. It is impossible for one to open a newspaper nowadays without having to read editorials, paragraphs, and newspaper items, all relating to emigration.

Europe is being dispeopled; an enormous current of hundreds of thousands of individuals of all ages and both sexes is changing country by crossing the Atlantic in search of a piece of bread. Italy, Germany, England, and Spain are being bled by the flowing to the United States of North America and to the republics of the Plate and to Chili of the constant stream composed not only of working-men and laborers, but also of school-masters, physicians, and journalists. It is in Italy and in Spain where the emigration fever now principally rages. It is not the young and vigorous man, who goes alone to try his fortune in trade, but whole families and the entire population of villages that now fill the steerages of the large transatlantic steamers making the voyage from Europe to the Plate countries. The numbers frighten. From the port of Liverpool alone 7,000 passengers, on an average, leave weekly. I have seen 1,500 natives of the districts of Rioja, Catalonia, and Aragon embark in one day from this port

*Transmitted under date of July 6, 1889.

for Buenos Ayres. Italy, which is the nation that furnishes the greatest number of emigrants, loses 200,000 of her young men per annum, and this high number will increase because of the frightful indigence now prevailing in that beautiful peninsula. It is sufficient to say that the case has occurred where all the inhabitants of a village have emigrated with its curate and alcalde at their head.

The emigration of Spaniards during the present year to date reaches upwards of 20,000 souls, nearly all of whom have gone to Uruguay and the Argentine Republic.

Neither the appeals of the press, nor the restrictive measures of the Government, nor the exhortations of the clergy from the pulpit suffice to detain this overflowing torrent of emigration, or to allay the necessity compelling the poor laborer to change his country with the hope, not of enriching himself, but of escaping starvation.

I do not defend emigration, but neither do I attack it, for all social movements spring from reason and are justified by necessity. Like all other great natural phenomena, these fluxes and refluxes of the human tide are obedient to laws as inflexible as those of universal attraction. To man it is only given to direct these movements, that they may be beneficial instead of damaging. Therefore would I ask all eloquent publicists, all wise governments, all virtuous priests, all lovers of their country, all those zealous of the prosperity and greatness of their land, to tell me how man is to be held to his native soil when goaded on by hunger? It is not a pleasure trip that is undertaken by the emigrant who abandons the beloved land that guards the ashes of his parents to launch out into unknown regions. No man emigrates, above all with his family, when it is possible for him to gain a livelihood at home. Take the peasant of Italy, who earns but 8 cents a day working in the rice swamps, upon which he has to subsist under consuming fever, weakened and disheartened by want. Can he be asked to withstand this lingering existence in his own country when on the other side of the ocean the smiling future is offered him of becoming a proprietor instead of a laborer, healthy instead of sick, with strength and happiness in place of weakness and distress? In our province of Andalusia the laborer gains 20 cents a day, and Galicia, without industries, has to sustain a population of one hundred inhabitants to the square kilometer. Is emigration, therefore, strange? In Spain and in Italy the people flee from hunger, in Germany from military service, the Swedes go in search of a milder climate than that of their frozen forests, while the Irish escape from the starvation that reigns tyrannically in green Erin, assisted by the landlord, the British soldiery, and the Fenians; and all from the impoverishment brought on by the maintenance of the powerful armies and colossal squadrons of the nations who pride themselves as being at the head of European civilization. The most bloody war would be more beneficent. It would cause less damage than this dreadful armed peace. It would have been better for Italy to have lost a battle than to have broken the treaty with France. The interviews between Bismarck and Crispi will be the cause of more emigration from Italy than the disasters of Novara and Custoza. And with respect to our own Spain, the constant fear of a Carlist rising compels us to spend $30,000,000 a year for armies, while the armaments of the rest of Europe also oblige us to consume in vessels of war and muskets what we require for internal improvements, public education, and the keeping up of our public credit. That is, the funds destined for the consolidation of peace, the education of the people, the development of industries, are squandered away in unproductive consumption.

Therefore, the emigration we now witness is necessary. It is not an evil when it is moderate and follows a rational course, directing itself to countries of Spanish origin. There are districts in Spain that can not support their inhabitants, and should those who emigrate remain behind instead, they would then have to live to a certain extent upon their fellow-beings. Again, it must be taken into consideration that a good many of those who return to their old homes bring back money and information which they never would have acquired had they not emigrated. The typical South American, who excites our laughter, and more so when we view him from the descriptions of Pereda, with his manati cane, big watch chain, and dazzling diamonds, spitting out thousands of dollars through the jaw teeth, still has something good in him, for rare is the village in the north of Spain that does not owe to the beneficence of some

young men who emigrated to Spanish America the building of its school-house, that of some factory, the steeple of the church, or of a public fountain. It is sufficient only to cite the fact that last year the natives of the province of Pontevedra established in the Plate countries, according to official statistics, remitted near $1,000,000 to their families at home.

There is another reason of a higher order that speaks in favor of emigration, above all with respect to that which goes to Spanish America, and it is that this current will lessen in some measure the influence of the Italians, whose number now reaches to near a million in the Argentine Republic; thus, neither will our language, nor our art, nor our history disappear from those countries, thereby enabling our race some day to fulfill the high destiny to which it is called when it may again occupy the place of honor in the world due to its history, a place that will give it the dominion and direction of future nations, not by the force it once enjoyed, but by peace and labor.

But, although I believe it neither possible nor wise to stop emigration, I do think it practicable to direct it through other channels more beneficial to the national interests.

In 1882 there was an excess in the number of Spaniards who went to Cuba and Porto Rico over those who returned therefrom to Spain of 9,787; but since 1885 it is observed that the number of Spaniards who return to Spain from those two colonies is greater than that which goes to them, exclusive of officers and men of the army and navy and others in the employ of the Government. Would it not be possible to make a part of this emigration go to Cuba? I believe it practicable. The climate is not so great an obstacle as believed, provided right measures are taken for colonizing with a view to the acclimation of emigrants. It would be an imprudence to send colonists from the north of Spain to Cuba, but the laborers from the Mediterranean provinces who go every year to Algeria to harvest the esparto grass under a temperature that never falls below 40° centigrade in the shade could well stand the heat and acclimate themselves in many parts of the island of Cuba. I believe the attempt would prove a success. Even from the provinces of the north of Spain agricultural laborers go to Brazil, under contract with that Government for the cultivation of coffee in intropical latitudes which are surely more unhealthy than the island of Cuba; and colonization is prospering so well there, that one of the southern provinces, that of St. Paul, is about to contract for twenty-five thousand European laborers, with preference for Spaniards, who will soon convert those virgin soils into eternal flowing fountains of wealth. Something has been written in this sense, and I have information of projects of military colonization which I do not consider proper in the present case.

Military colonization is convenient in recently conquered countries, with the principal object of commingling the conquerors with the conquered; but in Cuba there is no rational foundation for this, for we are not in that condition, nor are there any Indians there now as when the island was discovered, forming a distinct race from that of Spain. This does not mean that I am opposed to the giving of land and help to soldiers whose term of service has expired in the island and wishing to bring up families there; but the basis of colonization should be the family, taken from Spain, with preference for the southern ports, especially the Balearic and Canary islands.

The emigration laws of Venezuela, Uruguay, and the Argentine Republic furnish the rule to be followed. The French have colonized the province of Oran with Spaniards, and the persecutions suffered by our countrymen there affords the opportunity, if our Government wishes, to send some thousands of families from there to Cuba who desire to move to some country under the protection of our flag. It was for this reason that the colonization of the grounds about Melilla, an insignificant piece of land always exposed to the incursions of the savage tribes of the Riff, was thought of. I do not see why the effort is not made to increase the population of Cuba with these families habituated to life in Africa.

It is hardly necessary for me to recall the fact that Cuba is as thinly populated as Russia, with its twelve inhabitants to the square kilometer, while at the same time the sister island of Porto Rico has ninety in the same space. The fertility of the Cuban soil is proverbial, and can maintain a population ten times greater than its present one. Therefore, since an ex-

cessive emigration is inevitable, as I said at the beginning, let us try to send to our own unpopulated provinces the emigrants who, in fleeing from starvation, flock by thousands to enrich the French Algerine provinces.

Herewith I copy sundry articles of the emigration laws of Venezuela, which would give the desirable results if applied to Cuba, and the expense involved thereby, being reproductive in a short time, might well be divided between the budgets of the island and the peninsula.

EXTRACT FROM THE LAW FAVORING IMMIGRATION.

"(2) Agricultural laborers should be preferred as immigrants, and they should come provided with corresponding certificates authenticating their profession, morality, good habits, and of not being attacked with organic or contagious diseases, nor debarred by legal disability, without which requisites they will not be considered as immigrants entitled to the benefits of this law. This certificate must have the approval of the consul of Venezuela.

"(4) The person encharged with each embarkation must remit with it a list, in alphabetical order, of the names of the heads of the respective families and those of the persons comprising them, with name, age, profession, and if married or single.

"(8) The expenses for landing of the immigrants in Venezuela, as well as of their stay in quarters and passage to the places of their destination, will be paid by the Government.

"(10) The Government will give to each family that establishes itself in the colonial districts the provisional title of property of 6 hectares of arable land, a palm-bark hut, and the necessary working tools, leaving to each the right to cultivate whatever crops they may prefer. Those colonists who in the first year shall have cultivated all their land will be granted an equal number of hectares thereto, under positive title of property for all the lands given them.

"(11) During one year from arrival at the colony the Government will give the immigrant for his maintenance the following sums: $2 for each adult person from fifteen to fifty years; $1 for each person from six to fourteen years; nothing for persons under six or over fifty years."

The preceding ideas are left undeveloped, because that is not my present purpose; for they are in the minds of all—in that of the Government—and their realization is not only demanded by those impoverished Spaniards whom misfortune obliges to leave home, but likewise by the welfare of Spain and Cuba.

I do not claim to have discovered the difficult solution of an abstruse problem. These ideas will strike the understandings of every one. Many journals occupy themselves in the discussion of this subject, as emigration daily increases from the ports of Spain under the flattering enticements of the thousands of South American emigrant agents now swarming the land.

I only repeat what has been often said before. I am convinced that the colonization of Spaniards within Spanish dominions, as roughly indicated by me, is the panacea that will resolve the economic problem of Cuba. Then, if the seed is good, I trust it will be sown in fertile soil and bring forth good fruit.

I. P. A.

BARCELONA, *June 7, 1889.*

PENSIONS FOR AGED AND INFIRM WORKMEN.

REPORT BY CONSUL-GENERAL MUELLER, OF FRANKFORT-ON-THE-MAIN.

I beg to transmit for the use and information of the Department a copy of the law recently enacted by the German Parliament providing pensions for aged and infirm working-men, a law which, on account of the modern socialistic principles underlying it, deserves the careful and watchful attention of all civilized nations. It has put the finishing touch to measures inaugurated six years ago, and is regarded as the key-stone of state social reform legislation as intended by Emperor William I.

The measure was ably discussed in the Reichstag and bitterly opposed by members of the Centrum, of the faction of Advanced Liberals, and of the Social Democracy, receiving at its final passage 185 yeas and 165 nays, a small majority of 20 votes. The Conservatives and the National Liberals, supporters of the governmental policy, having a majority in the house, with slight exception voted for the passage of the bill. The socialistic members of the legislative body had no fault to find with the parental, protective, and compulsory features of the measure, and opposed it on the ground that its pension provisions were inadequate and insufficient. Most all other opponents attacked the principles underlying the measure, denouncing them to be repugnant to economic political science and in clear defiance of modern tendencies of individual self-control; on their part it was, moreover, contended that the measure was fraught with grave consequences; that, instead of accomplishing the contemplated good, it would enervate and demoralize the people, and rather aggravate than put an end to the present struggle between capital and labor.

What must appear exceedingly strange to the American mind is the fact that the German people at large seem to be wholly indifferent to public legislation; as if governed by feelings of fatalism and resignation, they let things go as they will. And even the present law, of so novel, extraordinary, and so momentous a nature, liable seriously to affect and to revolutionize their social affairs for better or worse and to shake their social system to its very center, has produced no excitement. The eventful measure is no more discussed in private circles and social conversations than it might have been if passed in a distant land. The doctrine of "Laissez passer" seems to be the order of the day. I hope that the people will never have cause to repent their indifference to public affairs, and that this latest evolution of state-craft on the part of their legislators may prove efficacious for the improvement of social conditions.

In conclusion, permit me to call your attention to my annual report of 1887, in which a synopsis of the then pending bill, with some statistical material, is contained. The bill underwent changes in its details, but the main features thereof remained, as will be noticed by comparison.*

JACOB MUELLER,
Consul-General.

UNITED STATES CONSULATE-GENARAL,
Frankfort-on-the-Main, May 31, 1889.

*See "Main features of the proposed law" in CONSULAR REPORTS No. 91, p. 610.

LABOR IN MANNHEIM.

REPORT BY CONSUL MONAGHAN.

Urged by the prevalence of strikes in other consular districts, I went the rounds of my own to see how the working people fared in factories, workshops, and quarries here.

CORK MANUFACTURES.

I went first to Frankenthal, in the Pfalz, or Palatinate, and visited the cork works of Bender Brothers & Co., to learn, if possible, in what way they could draw cork bark out of Catalonia and Andalusia (provinces in Spain), Estramadura, Portugal, southwestern France, Corsica, Istria, Dalmatia, and Algeria, bring it over land and water to a far inland city, 400 miles from the sea, transship it, unpack, clean, trim, steam, cut, bore, sort, and repack ready for sale, and then reship, send it down the river to the sea and over 3,000 miles of water, and sell it in the United States at a profit. I first learned that all corks, stoppers, and life-preservers were formerly made where the cork-tree grows; that governments, especially the Spanish, embargoed all ships carrying out raw cork, and do even to-day in some provinces. In recent years, however, the demand far outstripping Spain's power, with her slow methods, to supply, the raw material was let go. Immediately England, France, and the United States began cork manufactories. Since that time the industries have been increasing in size and number. The one I visited employs one hundred and twenty persons, men, women, and children. These work ten hours a day, and turn out in that time two hundred thousand stoppers, or about sixty millions a year. The kinds turned out are of all sizes, and are those shaped like a truncated cone, the perfectly cylindrical, some bored for chemical and nursing-bottles, and the various ones used in the more common branches of trades.

The firm claimed to be able to compete with any other in the Empire. It ships large quantities to the United States. At the moment of my visit, in fact, leaving Mannheim on the same train with myself and bound for Frankenthal, was a man who had traveled all parts of the world, spoke half a dozen languages, and was just going to get his last orders preparatory to taking a North German Lloyd steamer for New York, whence he intended to travel all over the United States and solicit orders for the corks of Bender Brothers, of Frankenthal, Germany. In company with this polyglot and one of the Benders I went the rounds, from the sheds where the bark is packed up in huge piles, through the steaming rooms, where it is softened, through the cutting, trimming and sorting, and packing establishments back to the office.

Unfamiliar as I am with the manufacture of these articles in the United States, I can do nothing in that most excellent way of arriving at results, drawing comparisons; I can only say I found something over one hundred persons employed in the various branches, and that, in general, these people do not seem, by any means, so skillful as ours. If I may be permitted

to use the term, and I do so in no belittling sense, they seem, alongside of our people, inapt, unskillful, and clumsy, and this in spite of their wonderfully developed and developing schools—industrial ones, in particular. Whether two hundred thousand corks a day is a large product for a factory employing one hundred and twenty hands and having the very best and most recently improved machines, cork manufacturers will know best.

Mr. Bender complained that it was strange but true that institutions connected with the Government and using millions upon millions of stoppers every year drew their supply of finished wares from firms in Catalonia instead of from firms at home. It is supposed that that province, just beyond the Pyrenees, in Spain, delivers the best corks and cork bark, though Mr. Bender assured me that the very best of all, that suited for the manufacture of corks for champagne bottles, comes from southwestern France. As an example he cited the State springs of mineral waters in the Prussian district of Wiesbaden, at Niederselters, which uses at least, annually, seven million stoppers, as one of those which buys all its supply in Catalonia. This he considered unjust, inasmuch as his and other German firms were producing just as good goods, and to his knowledge Catalonia's woods were not yielding and never would yield enough bark to make all the stoppers marked Catalonian; that hundreds of thousands of tons of bark and even manufactured wares are brought into Catalonia from Andalusia and Portugal, and the former manufactured there, boxed up and sold in the world's markets as the "real Catalonian, none genuine without the stamp." He expressed a hope that the Empire would soon, out of love of the Fatherland, turn round and encourage home industries by buying its cork supplies of Bender Brothers & Co. and other German houses rather than from strangers in the wilds of Catalonian forests. Coming to the subject of his exports to the United States, Mr. Bender said his present ability to export thither was due mostly to the fact that the demand was greater than our manufacturers could supply. He said further that he was able, he supposed, to get cheaper and more constant labor than we could in the United States. Whether the first reason assigned is a true one is matter for our manufacturers to consider and, if true, remedy. Labor is indeed cheap, that is, measured by the units of money; but there are those who claim that a mark (23.8 cents) will go as far here as a dollar with us. But it won't; I wish it would. The help here get from 15 to 60 cents a day. I am, of course, speaking of persons employed in factories; tradesmen, mechanics, and officials get more. Many of them come from neighboring villages and seem glad to get work at almost any price. They are as a rule rugged, healthy, and strong. The factories are well ventilated and subjected to careful and rigorous inspection.

The clothing of the working classes is very simple, and as a rule very strong and cheap, with little or no style about it. The women wear no headdress, but go bare-headed to work winter and summer. I should say, however, that extremes of either heat or cold are almost unknown, though they have harvests of fruits and ice, and those require pretty good degrees of both heat and cold.

Their food consists, for the most part, of bread and coffee for breakfast, a vegetable soup with potatoes at noon, and coffee and bread for supper. They have half an hour's rest in the morning, from 8 to 8.30, and again in the afternoon, from 4 to 4.30. This arrangement, in spite of what persons who never worked in a factory may think of it, does no harm to the employer and breaks up, for the workman, the long, dull hours of his daily toil. They get here the full benefit of vegetarian philosophy, for meat with the poor is very rare. If they get it once or twice a week, they count themselves lucky. Nevertheless they look healthy, are never hungry, and seem happy. The simplicity of this people's clothing and food is in keeping with the general simplicity of their lives.

Their dwellings consist of stone cottages and buildings of rough stone interlaced with oak and plastered on the outside. A tenement consists of one or two rooms, rarely more. The rents are comparatively cheap; not, however, when one considers the accommodations. They run from $1 to $2.50 monthly.

What food they get is good, healthy, and nutritious. A 6½ or 7 pound loaf of rye, black bread, costs 18 to 25 cents; small loaves, weighing one and two pounds, cost 3 and 6 cents respectively. Meat is much dearer than with us. Ham, of which the people seem very fond, considering it a great delicacy, costs from 25 to 50 cents a pound, the latter price for the boneless commodity. Vegetables are cheaper, more plentiful, and easier to get at; in fact, in the country many succulent roots and greens are gathered free in the fields and along the hill and mountain sides.

To my question, "How a reduction of our tariff rates on manufactured cork would affect America," both men assured me that the consumers would make great gains. When I asked how such a move would affect manufacturers both men were silent. "Could they still compete?" I asked. "That depends." Whether with our better machine methods and the superior skill of our people we would still be able to compete with these firms, the duty once removed, is a question for our economists and legislators to handle. I give the facts just as I got them.

MISCELLANEOUS LABOR.

Cotton weavers.—Thanking Mr. Bender for his kindness, I sped away to the cotton-mills at Oggersheim. Oggersheim has a large cotton-mill. As I reported fully on this factory a year ago, I need only to say here that the firm has ceased sending wares to the United States, being unable to compete with our manufacturers. I was told that a 10 or 15 per cent. reduction in our tariff rates would be necessary before exporting could again be resumed. In the mills the people do not do as much work as ours. It takes a man and two helpers, lads of sixteen to seventeen years, to run a pair of English mules. Most of the machinery is either English make or German imitation of English models. The man makes from 2 to 3 marks a day, the lads from 1½ to 2 marks each. In the weaving-room women run only one and two looms, where

with us they run four, five, and six; they get from 1 to 2 marks a day of eleven hours. The people seemed happy and satisfied.

Stone breakers.—Taking a train I went further into the Palatinate, and, before I returned to Mannheim, into that part of the Alsatian country lying nearer to Mannheim than to Kehl. I walked over a good deal of the country. On the roads I found old men and young ones breaking stones, and getting from 25 to 50 cents a day. One old man of sixty-seven years could make 24 cents, while his companion, a lad of sixteen years, could make 50 cents; both were paid by what they broke. They must break a pile 2 by 2 by 10 feet, or 40 cubic feet of hard granite; for this they get $1.10, or 4.50 marks. The stone is usually a hard granite. I found these prices prevailing for the same stone and work in Hesse, Würtemberg, Baden, Bavaria, and Alsace. The old man and boy had started off from their home in the village to go to work at 4.30 in the morning and they would quit at 6.30 or 7 in the evening; they can quit when they please, but it tells on the pennies.

Wood sawyers.—I went into a saw-mill and saw wood cut as it might have been cut in Tubal Cain's time. There was a "Jack" in and a "Bob" on a box, that is, there was a man in a pit and one on a box above. Like the stone breakers, these men are paid so much a square meter, 36 pfennigs (not 9 cents good). They can saw from 12 to 15 square meters a day. The sawyers work from 6 a. m. to 7 p. m. They get more for oak and beach than for softer woods. They had no grumbling to do and seemed satisfied.

Quarrymen and masons.—On the road running out from Dürkheim to Kaiserslautern, I ran across stout fellows working in a quarry. The masons get 70 to 93 cents, the workmen, laborers, 46 to 60 cents, a day. They had each a 2-pound loaf of black bread, for which they paid 8 cents a loaf. On the same road I found men working in a large chemical establishment, averaging 47 cents a day of eleven hours work.

Women field laborers.—I found girls and women working in the fields, strong, healthy, rugged, rosy-cheeked, arms and legs brown as bronze or berries, bending their backs and bodies all day putting in seeds and pieces of potatoes, and getting 18 to 30 cents a day. One woman cutting fodder for her cows told me that a cow giving from 10 to 20 quarts of milk a day, salable at 3 cents a quart, sells for from 200 to 300 marks, or from $40 to $65.

Shoe-makers.—At Pirmassens I visited the shoe-shops and found girls making shoes in the streets, wandering at will from place to place to keep in the open air and out of the sun. For sewing or making the uppers they get 35 pfennigs or 8 cents a dozen, and can sew five dozen a day. The men get from 50 to 75 cents a day, the women from 18 to 50 cents. As the methods of manufacture and style of ware are so different from those of Lynn and Marblehead, in Massachusetts, I could make no just or profitable comparison. The living is comparatively very cheap, such as it is. It by no means equals that of our people engaged in the same class of work. In a restaurant, filled at the 4 o'clock "rest" with hundreds of men and women from the shops, I had ham twice, plenty of good bread and butter, a pint of Munich beer,

the best brewed in Germany, the "liquid bread" of Liebig, and paid 15 cents or 63 pfennigs for all. The shoes and slippers made here are thick, heavy, and clumsy. I never saw custom-made shoes here, anywhere in Germany, equal in beauty of style and finish to our "ready-made."

Millers.—Crossing into Alsace I took shelter from the rain in a grist-mill. As it was noon I invited myself to a quart of sweet milk, some rye bread and butter, and paid for the same the sum of 20 pfennigs, or 5 cents. The grandfather, father and son, the mother and her daughters sat at the family table and ate from tin dishes with knives, no fork, and helped themselves from a large, round, brown earthen-ware dish placed in the middle of the table and bountifully filled with pork and cabbage. Their drink was a murky white wine grown in their vineyards. The meal finished they rose together and silently thanked God for his gifts and bounty and turned again gladly, willingly, laughingly to their daily toil.

Potters.—In Suffelnheim, a few miles from Hagenau, I visited the pottery works of the mayor of the town. I found men turning a potter's wheel from 5 a. m. until 7.30 p. m., intermission only long enough to enable them to decently eat food necessary to live on, and getting 50 cents a day. The women, for painting the flowers and colors, get 18 to 30 cents a day, and have far from constant employment. One man, when I asked him how much he got, said: "Not so bad, 2 marks a day" (48 cents).

Brick-makers.—I went with a manufacturer of bricks to see his works. His workmen got about 2 marks or 48 cents a day and work hard. He himself, with quite a large establishment, is satisfied with $1,000 or $1,500 a year as profit.

Rents.—Rents at Suffelnheim ranged from $1 to $2.50 a month for working-men's tenements. They are clean and well appointed outside. They by no means, however, compare with those of the same class of people in the States. There is usually a large strip of land assigned to each, which the family cultivates, raising various vegetables. It must also be remembered that many families have what are called communal rights, that is, the right to the use, free, of so much wood, meadow, and arable land, to so many cords of wood yearly, etc.

APPRENTICES.

In one village I had a locksmith's apprentice fix the lock of my bag. From him I learned that he must serve three years, during which time he would get 12 cents a week during the first year and 23 cents a week during the last two. He was seventeen years of age and just from school. A printer's apprentice told me he must serve four years, and he got nothing. Some receive pay and some do not.

TRUSTS.

In Alsace they complained of bad times, resulting from France no longer buying their goods and of the German market having been already occupied. Competition fails to drive out the old firms. The great danger seems to be

from a fear that the big firms may combine and crush out and kill off the smaller ones. A stone crusher, such as we have in the States, would cause hundreds here to starve. Large silk, cotton, and woolen mills will take bread out of hundreds of mouths; and yet manufacturers ask, "How can we compete in the world's markets if we are handicapped by a system that chokes off progress?"

LABOR PENSIONS.

The new legislation, paternal in its character, looking towards paying pensions in old age (after seventy years) to working men and women, is silently ignored, or, if talked about, condemned; for the people, as the Emperor said a day or two ago, are reading the newspapers, and know that such a pension must be paid by the people themselves. They would rather have a system that would enable them to make more and put by for old age.

FOOD PRICES IN MANNHEIM.

Articles.	German money.		American money.	
	Pfennigs.		*Cents.*	
Beans.....per pound...	15 to	20	3¾ to	5
Barley.....do.....	20	40	5	10
Rice.....do.....	15	40	3¾	10
Peas.....do.....	24	35	6	8¾
Green corn.....do.....	30	45	7	11
Coffee:				
Raw .....do.....	115	170	27	42
Roasted .....do.....	140	220	33	53
Flour:				
German.....do.....	18	22	4½	5½
Hungarian.....do.....		28		7
Rape-seed oil.....per liter...	80	120	20	30
Salt .....per pound...		10		2½
Sugar.....do.....	38	42	9½	10½
Chicory.....do.....		28		7
Black tea .....do.....	200	500	48	$1.19
Oil:				
Olive.....per quart...		240		58
Lamp.....do.....		22		5½
Herrings.....each...	6	12	1½	3
Hams:				
Common (boneless) .....per pound...		160		*38
With bone .....do.....	110	120	25½	28
Potatoes.....per cwt...	300	400	75	$1.00
Dried prunes .....per pound...	20	40	5	10
Dried apples:				
German .....do.....	30	50	7½	12½
American.....do.....		80		20
With peel on.....do.....		25		6¼
Without peel.....do.....		50		12½

*Retail.

J. C. MONAGHAN,
Consul.

UNITED STATES CONSULATE,
Mannheim, May 24, 1889.

COOLIE LABOR IN EAST SUMATRA.

REPORT BY CONSUL STUDER, OF SINGAPORE.

The coolies are engaged by shrewd Chinese, Penang, and Singapore coolie-brokers, in China, and it is well known that the inducements held out by the latter to the former are of a questionable sort. These coolies are very poor at home and have not the means to pay their deck passage on a steamer to this port or Penang; the coolie-broker provides it, and consequently they are in his debt when they reach here. On arrival they are registered first of all by the Chinese protectorate, a Government office and supervision, and declare themselves as being under the care of and bound to said broker to go to work on tobacco estates in Sumatra (or other plantations hereabouts, as the case may be), and the broker then takes charge of them, and generally locks them up in a large room or court so they can not run away. The tobacco-planter, requiring fresh laborers from China, called "siukeys" (which means that they have left China for the first time), applies to the coolie-broker to send him, at so much per head, delivered at Deli, the number of coolies required. Before sending the coolies on board of the Deli steamer two things have to be done, viz: Each coolie has to be examined thoroughly by a physician in good standing, as to his bodily fitness for the task he is about to enter upon, the physician giving his certificate for each man found sound. These are taken before the Chinese protector to sign the labor contract with the planter, after having been signed by the latter or his agent, and all the conditions and stipulations contained therein having been read and explained to the coolie. Each siukey costs the planter all the way from $60 to $120, delivered at Deli, all depending on circumstances and scarcity of laborers. This sum includes the coolie's passage from China, his board here, the cost of medical examination, the fee exacted by the Chinese protectorate for drawing up and attesting the contract in triplicate, the coolie-broker's commission, passage to Deli, and a certain share (about one-third of the whole amount) as advance wages to the coolie himself, out of which he buys here clothes and other needed articles. The contract is generally made for but one crop, *i. e.*, until the tobacco is delivered by the coolie at the drying-shed, priced, and hung up to dry, with option to retain him thereafter for bundling and assorting tobacco, at extra wages, not pertaining to cultivation. The most intelligent and best-behaved coolies are retained for that kind of work. The contract further provides that the planter must house the coolie at his expense and afford him medical assistance in case of sickness. This is a much-needed proviso, and if it were lived up to faithfully, the number of coolies that die would be much less. The planter further binds himself to provide all the cooking utensils, and to provide him with the needed food, at market price, until he is settled with and leaves the plantation, contract expired, the food consisting chiefly of rice, fish, pork, etc., including opium when a coolie is addicted to the vile drug, and many are. A Chinese shop-keeper, coming

well recommended, is kept on the plantation and bound in writing to sell to the coolies the needed food, opium, tobacco, oil, etc., at usual market prices. The planter issues to the coolies tickets, bearing their cash value, good for 10, 20, and 50 cents, to answer as cash and to buy what they need from the store-keeper, and the latter gets the cash for them from the planter at certain periods. After the tobacco crop has been cut and housed each coolie is settled with, and, after deduction of advances, as per contract, the balance due is paid to him. The best coolies are then retained to bundle and assort tobacco and do other work, and the rest are discharged.

A. G. STUDER,
Consul.

UNITED STATES CONSULATE,
Singapore Straits Settlements, 1889.

THE AUSTRALIAN WATTLE.

REPORT BY ASSISTANT COMMISSIONER MERRY.

The growing scarcity of oak bark in the United States, and the substitution of all sorts of chemical agencies in the production of leather leads up to the inquiry as to whether other vegetable products can not be found to fill its place. Till within the past twelve years oak was indispensable in ship-building, but iron has been substituted almost entirely for it, more especially in vessels driven by steam. In the ordinary course of events this should have given some respite to the oak forests of the United States, but such is not the case. The growing demand for oaken furniture in the homes of the rich has so thinned out the timber that it is soon destined to become as costly as mahogany or black walnut. Hence all idea of cultivating oak for tanning purposes must be abandoned, as it is of too slow growth.

On a recent visit to Australia, where I spent over six months in the employ of the State Department, it was my good fortune to come across a vegetable product which will, in my belief, become a ready and perfect substitute for the rapidly vanishing oak of our own country. It is called there the "wattle," and belongs to the wide-spread family of acacias. These trees are cultivated extensively in the colonies of New South Wales and Victoria, where they lend a charm to the scenery, both by their fragrant blossoms and exquisite foliage. The two varieties most cultivated in those colonies are the black wattle and the broad-leafed wattle. Both these varieties are indigenous to an exceedingly dry climate and poor soil, and attain their growth in about six years. I noticed they attained a greater diameter of trunk, and consequently a greater amount of bark in the moister localities near the coast, but was told that the bark grown there contained a less percentage of tannic acid than that produced on the arid plains north of Murray's River. On my return to the United States, in January last, I brought a small quantity of the reeds with me to give to friends in California, where they are already coming to a vigorous and healthy growth.

The black wattle (*Acacia decurrens*) produces the larger amount of tannic acid, and is, therefore, preferred by the trade in England, where its market value fluctuates from $38 to $42 per ton, according to the supply in the market. Its tanning properties may be readily inferred when I state that hides can be readily tanned in a bath of liquor made from black wattle in forty-seven days, whereas in liquor made from the best Santa Cruz oak (the best found in all the Pacific States) the time required is from seventy-five to eighty days. The black wattle contains from 30 to 32 per cent. of tannic acid, and a table of comparative percentages will show its industrial value:

	Per cent.
Black wattle	30 to 32
Broad-leafed wattle	26 to 28
Santa Cruz oak	16 to 18
Siskey or mountain oak	14 to 16
Sacramento Valley oak	10 to 12

This will be sufficient, I think, to convince the most skeptical of the real value of the Australian wattles and of the necessity for their immediate introduction into America, as well as their dissemination by the Agricultural Department of the National Government. Certainly, if the millions of dollars already invested in the tanneries of America are not to be impaired for the want of proper vegetable chemicals, some such step should be taken at once to relieve a growing stringency.

The broad-leafed wattle (*Acacia pycanthea*), while it does not possess the tannic properties of the black wattle, has several advantages over it. It is a larger and handsomer tree, and, being a native of the mountain slopes of the picturesque Dandenong range, can withstand a greater degree of frosty weather than its congener. For this reason, while I am confident that the black wattle will thrive in the dry climate and arid soil of Arizona, New Mexico, and Texas, as it is already doing in the southern counties of California, I am equally confident of the success of the broad-leafed wattles in the States of Louisiana, Georgia, Alabama, Mississippi, and Arkansas, especially if they are grown upon gravelly soil away from the swamps.

One of the most successful men in wattle culture that I can name is Mr. Stratford Shettle, of Melbourne, who is the owner of Gladys Park, a stock farm of 1,100 acres situated some 17 miles from the metropolis of the great south continent. He saw some years ago that there was no reason why horses and cattle should not have an abundance of grateful shade, as well as of copious and succulent herbage. Accordingly, he began to set out wattle trees all along the fences at Gladys Park, planting a certain quantity of seed in his nursery from year to year, until he has his entire farm surrounded with these exquisitely beautiful and withal profitable trees. These he cuts down at five years of age, strips off the bark, and has the remainder of the wood for fuel on the farm. His income from the sale of bark is about $3,000 per annum, which is about 12 per cent. upon the price he paid for the land to acquire it in freehold. He allows the young trees to remain in the nursery until the winter (July or August) after they are a year old and then sets

them out 12 feet apart at equal distances between the four-year-old trees. When the latter have attained their fifth year, in November, he does not lop them off, but grubs around the roots, so that the falling tree eradicates itself and leaves a hole for the planting of new trees hereafter.

I deem the introduction of these trees into the Southern States a matter of vast importance for several reasons, viz:

(1) They will not grow north of Mason and Dixon's line.

(2) They are natives of an arid climate, and need comparatively little moisture. Hence they will grow on the treeless plains of Texas, New Mexico, and Arizona, furnishing the cattle breeders of those regions with an abundance of good fuel, after removing the bark, which ought to yield $5 to the acre if properly planted and guarded while the trees are young and delicate.

(3) They will be the means of strengthening a great industry, both in the North and South, by furnishing a new and unlooked-for supply of raw material, without which that industry must inevitably decline.

It will make men better by adorning and rendering beautiful their homes, and by giving them the idea that such homes are something better than the temporary abiding places of so many white Bedouins.

Hence I recommend that the Government should send to Melbourne and purchase 500 pounds—250 pounds of each of these varieties—of wattle seed, freshly gathered at date of present writing, to be furnished to well-known agriculturists throughout the States and Territories above described.

The planting directions are as follows: Reduce boiling water to a temperature of 140° F.; steep the seeds therein till the water grows cold, and then plant them immediately in drills. Begin to thin them out gradually in the fall, and set them 14 feet apart in the winter after they are two years old. At four, five, and six years the trees should be ready to cut down, which should be done in April when the bark contains most sap.

Trusting that this may become a source of wealth to the New South,

I am, etc.,

THOMAS B. MERRY,

Assistant Commissioner Melbourne Centennial Exhibition, 1888.

HELENA, MONT., *June 3, 1889.*

THE MINERAL WEALTH OF MOZAMBIQUE.

REPORT BY CONSUL SMITH.

The exploration of mineral riches in the province of Mozambique has, with well-founded ground, preoccupied the Portuguese Government since the second half of the sixteenth century, and even further back, in the time of King D. Sebastião. Very costly military expeditions and scientific explorations are recorded as having taken place in the past, and are confirmed at the present time by the historical narratives written in the Decades, by Foão de Barros, or in the "Ethiopia Oriental," by Rev. João dos Santos. Everything confirms the statements that great efforts were displayed in times past by the

Portuguese to secure the gold they knew at that time existed in the province of Mozambique. The efforts displayed to this end, however, certainly did not produce the results that were evidently expected, and even of late years success has not crowned the efforts made by the Portuguese Government, either as regards their grants of facilities in the laws of mining or in their large land concessions to exploring companies, to collect and work with the capital necessary to enable one to realize with advantage the pretended exploration.

The flattering hopes mentioned in the skillful and interesting report that precedes the decree of December 4, 1869, which, up to last year, constituted the existing laws of Mozambique regarding mines, were by no means happily confirmed in the course of the last twenty years. But it may also happen that the new laws just passed will improve the mining facilities of the province and remove those obstacles which have of late arisen concerning land grants and mining. These new laws seem to be the outcome of necessity and experience, and by no means can be called vexatious legislation, because they have evidently been advanced for the special benefit of the province of Mozambique. They contain clauses specially adapted to the mines of metals and precious stones in the province, and are, in this point at least, entirely different to the basis and context of the decree of December 4, 1869.

A general law, based on the principle of mining legislation adopted by nearly all the European nations, and decreed to have equal application throughout all the Portuguese colonies of Africa, Asia, and Australasia, comprising the universalities of the useful mineral productions of whatever nature and quality, could not certainly satisfy one in the present times, for laws governing the search for, and exploration of, the mines of precious stones and metals at Mozambique; and it seems that a plausible reason for the non-development of the mines here is that such universal laws have been the laws in force governing mining up to the present time.

When one considers the extraordinary and rapid progress of the mining industries in the colony at the Cape of Good Hope, and also in the Transvaal colony, and compares such progress with the mining stagnation of this province, where it is known positively that rich auriferous deposits exist, it seems but natural that one should turn to the mining laws of the province for the purpose of knowing at least one of the causes that have obstructed the improvement of such opportunities with mineral riches.

The mining laws of the Transvaal Government, with its practical and positive features, is not an artificial result of a mere theoretical science. Spontaneous action, to meet the demands of the local necessities, successively reformed in 1885 and 1886 some of the most important mining laws in the Transvaal, and even changed, by a special form in last July, the laws which brought to its districts the first discoverers and explorers of land of alluvium and deposits of gold quartz; and one might almost say that had the old laws of the Transvaal been in force to-day no more headway would have been made than has at present been made in the province of Mazambique.

The mineral laws of the United States of America and the British colonies of Australasia, of the Cape Colony and Natal, are all special laws for the mining of precious metals and suited to the very particular nature of this kind of mineralogical exploration, and also to the local conditions of each of these places, but, in the opinion of specialists, the most practical laws to which this province should adhere are those now in force in the Transvaal, not because of the superiority of these laws over the laws of the above-mentioned countries, but simply because the Transvaal districts touch the mining districts of Mozambique. It is, therefore, obvious that great advantage would result from the resemblance of laws which would have to deal in two states with men passing continually from one state to the other in the fulfillment of their industry.

It was only in the year 1868 that discoverers began to realize on the gold deposits and diamond fields found in the southern part of Africa. In July, 1871, under the roots of an old thorn-tree, in the skirts of the mountain afterwards famous as Kimberley or Kolesberg, the first diamonds were discovered. Those fields, then uninhabited and unknown, are now mined and explored in all directions. A large town has been built upon them, with churches, schools, courts of justice, libraries, public gardens, a town having nearly all the comforts one desires, and being connected with the ocean by a railroad journey of only thirty-one hours.

The diamond fields of Kimberley, Old de Beer, Toits Pan, and Bultfontein, lately gave work to more than 10,400 miners, 1,228 only being white. From these mines the declared value, certainly inferior to the real, of the diamonds exported from 1868 to 1884 amounted to $141,976,000. Kimberley alone exported in 1883 diamonds valued at $12,341,345; in 1884, $12,632,796; in 1885, $11,217,398; and in order that, from another point of view, it may be seen how prosperous are the conditions under which the diamond mines of the Cape Colony are worked, it is only necessary to compare the quotations of some of the shares during the short period of one year. The Compagnie Francaise des diamants de Kimberley, for example, saw its shares rise from $148 to $255; the Kimberley Central from $83 to $250; the Standard (Kimberley) from $75 to $250; those of the de Beers from $60 to $240, and, finally, those of the Bultfontein from $43 to $150.

The first discoveries of gold in the Transvaal were made during the years 1873–'75. It was in the latter part of 1875 that an Englishman named Solomon, from Port Elizabeth, extracted from there 70 kilograms of gold-dust and bullion. These were the first signs of the auriferous richness of the South African Republic. In 1884 Moodies discovered the Sheba mines, and their reported richness soon crowded the Transvaal with miners. In 1886 the extraordinary deposits at Witwatersrandt were discovered, and since that time new deposits have been discovered day after day. The three principal auriferous districts of the Transvaal are: (1) De Kaap, with its capital at Baberton; (2) Witwatersrandt, to the south of Pretoria; (3) Lydenberg, to the north of De Kaap. In all these three places there are numerous establishments

and mining fields, and even beyond their areas there have been found not a few important discoveries of deposits.

Besides the Transvaal there are also known auriferous deposits in Mussuate, in Zululand, in the territories of the New Republic, in Natal, and all the southeast parts, from Zululand, on the coast, to beyond Lympopo, and chiefly in the territories of Matebelles. One can realize on discoveries of gold fields and deposits by two different ways. By concessions to companies who lease whole tracts of land and who afterwards lease again to small tenants, or by keeping open and free, on the part of the Government, the whole of the gold fields. In the tract comprised in the great concession in favor of the Moodies there were, in October, 1887, about twenty-eight mining syndicates. The production of gold from the Moodies concession, in 1885, was 6,478 ounces, while from January, 1886, to April, 1887, 11,386 ounces were realized. In the Sheba concession, also situated in the district of De Kaap, the product in 1886 was 8,083 ounces. In 1887 it was raised to 12,380, and in the months of January and February only of last year 4,090 ounces of gold were raised, which would lead one to suppose that it was possible to produce 24,000 ounces yearly.

The income to the Transvaal Government from mines yielding like the above grants is excessively large, and is obtained in the form of license for prospecting, for taxes and duties of all kinds, and from the cultivation in a large scale of gold mines. Through these channels the district of Witwatersrandt alone receives an income of about $45,000 per month, or $540,000 per year. The progress made in Natal and the Cape is not so advantageous. However, the export of gold from these two colonies increased in the following manner from 1881 to 1887: The value of gold exported in 1881 was $80,784; in 1882, $99,180; in 1883, $136,980; in 1884, $175,500; in 1885, $315,000; in 1886, $606,420; and in 1887, $1,066,500.

Much space has already been used in stating facts in connection with mines outside the province of Mozambique, but the excuse for this is that almost all the districts mentioned are in close proximity to the province and have, therefore, some mining connection with it. In trying to obtain the value of one piece of ground it is usually essential that the surroundings be taken into consideration, and the foregoing facts have been given in order that a more definite idea could be had of the position Mozambique holds in the gold fields of Africa.

In order to realize the possibility of finding equal if not superior germs of prosperity in the colony of Mozambique, it is not necessary to refer to the records to be reminded of the old legend of the Ophir territories, to revive the figure of Solomon or the Queen of Sheba, or, in more recent times, those of Emperor Monomotapa or the princes of his dynasty. Neither is it necessary to be reminded of historical facts, such as the expedition of Francisco Barreto in 1569, the great and cruel wars with Quiteve, the disaster of Chicova, or any of the later wars, to convince one that the native as well as the white man is fully aware of the mineral wealth of the province.

Recently, in almost all parts, the old deposits of precious metals have been rediscovered. During the year 1887 twenty-one mines were registered at Lorenço Marques; out of these seven were of coal, ten of gold (alluvion), one of gold quartz, two of diamonds, and one of silver. On the Kulumane Mountain, about 15 miles from the confluence of the Sabi and Incomati; on the right margin of the former river, a short distance from the Transvaal frontier; on the left margin of the Incomati, half the distance between the mouths of the Sabi and Crocodile rivers, in a place called Meton; and in the mountains near Libombos. In all of these places gold has been discovered, and each discovery has been officially registered according to the laws in force at the time reported. In the territories of Matolla, about half a mile from the Umbeluze, there have been duly registered three mines of coal, diamonds, and precious stones.

Nor is it only from the small area of the district of Lorenço Marques that, in 1887, were realized and registered such discoveries. The Official Bulletin of this province of February 2, 1889, refers, among others, to the registry of gold mines near the Revué River, affluent to the Busi, and also in the adjacent mountains at Inhate, near the same River Busi. It is also well known that in the territories of Sofala and Manica, in the vast territories ruled by Gungunhana, in the interior of Zambesia, and in some parts of the territory of the Mashonas gold is found and worked at the present time by an old process.

To the south explorers and miners are beginning to wander everywhere, and are even now trespassing over the boundary line of the province of Mozambique. The policy of most, if not all, of these adventurers seems to be to establish relations with the native kings rather than with the Portuguese authorities, and this fact in itself gives one a very good idea of how much power the Portuguese are acknowledged by others to hold over the natives in the tract of land they claim. There are numerous official documents to show the political emergency of providing regulations in accordance with necessity and circumstances. Through the Portuguese consul at Cape Town people with large interests in the gold fields of the Transvaal and the Cape have tried more than once to extend their explorations and searches to the territories between the Libombos and the Incomati. All requests for territories were withdrawn, however, before the formalities and delays were gotten through with, so that, up to the present time, no company has yet been formed to explore the Libombos or the Incomati districts.

While the explorers with large capital and technical resources were kept back, with great loss to the province, on the other hand numbers of miners were advancing to solicit from Umbandine, King of Mussuate, the concessions of lands situated to the east of Libombos, and, because of this, the Portuguese advertised in the Cape journals that such concessions were illegal and would not be recognized by the Portuguese Government. The Portuguese consul at the Cape, at the same time, also published the principal parts of the decree of September 12, 1869, and, in an official letter to his Govern-

ment, he insisted upon the necessity of modifying the legislation in regard to mining, as, it was claimed, nothing could be advantageously done until after modifications had been passed and advertised.

The Portuguese consul at Pretoria, when sending last year to Mozambique and Lisbon the mining regulations of the Transvaal, said that if the mining laws for Mozambique could be founded upon a similar basis, "he was sure that the income of Mozambique would be largely increased."

In the same way the governor-general of Mozambique, while sending home a prospectus of mining laws, wrote, on the 5th of March, the following: "It is my duty to inform you that the matter seems most urgent, and, therefore, I request Your Excellency to publish laws more practical and plain than those which are now in force, because an invasion of miners is shortly expected at Sofala." With the same idea, the governor telegraphed home the following: "It is said that shortly there will be coming thousands of white men to explore the Gungunhana. It is most necessary that more easy mining laws be established immediately."

According to the laws that were submitted to the King of Portugal on December 6, 1888, and passed by him on the same day, the necessities and conveniences pointed out by the colonial and consular authorities seem to have been obtained.

The exploration and working of precious stones and metals and concessions of land can now be obtained in two different ways—either by direct concession from the Government to individuals, or by grants from the governor of the province to the public of land for cultivation, and by Government leases to different persons for a certain and renewable time of tracts of land for exploration. The rules referring to the manifest of discovery and to the right of search founded on such manifest are common to any of these forms of exploration.

As for direct concessions from the Government, the regulations of December 4, 1869, still remain in force. Grants for exploring land and mining can now be obtained under the same conditions in Mozambique as are now in force in the Transvaal.

The installation of land granted for public explorations, the granting of license to explorers, the rents due for claims, individual explorations, the explorations of companies, the transmission of rent by indorsement, the appointment of local commissioners with technical, administrative, and judicial powers, the rules concerning the laborers, and all other rules referring to metals and precious stones are now covered by regulations which remove completely the old laws.

The new laws have already recommended themselves by the favorable results drawn in places where they have been in existence for a long period, and have been subject to continual modification and improvement to the necessities of the surrounding circumstances.

It is by this crucible of experience that the Portuguese will in time learn how and where the new laws must be altered or exchanged to meet the de-

mands of any special territories. The new laws also seem to have embraced two points of great necessity, one being of an administrative nature and the other of a proper political character. It is certainly necessary to forward as much as possible the progress of mineral riches in Mozambique, and to create a fountain of income, if possible, to cover the heavy expenses and debts now pressing the province.

It is not less necessary to point out also, and at the same time, how other nations for some time back have disputed the right of Portugal to these territories, and especially those south of the Zambesi, and perhaps it has been realized of late by the Portuguese what the real value is of the mineral wealth of Mozambique.

E. W. SMITH,
Consul.

UNITED STATES CONSULATE,
Mozambique, March 25, 1889.

FACTORY INSPECTION IN AUSTRIA.

REPORT BY CONSUL JONES, OF PRAGUE

The law creating inspections of industrial establishments went into effect June 17, 1883. It consists of twenty sections, and its main provisions are given in the following synopsis:

The minister of commerce is authorized to appoint, with the concurrence of the minister of the interior, the necessary number of factory inspectors in the different provinces, and a general inspector. He may also appoint special inspectors for certain branches of industry, whose districts may comprise different provinces. Only persons having the requisite knowledge of business and speaking the languages which prevail in their respective districts may be chosen for the office of inspectors.

It is the duty of the inspectors to enforce the existing laws and regulations in regard to—

(1) The arrangements and provisions to be made for protecting the lives and the health of operatives, both in workshops and dwellings.

(2) The mode of employing workmen, the hours of work, and the periods of rest.

(3) The registry of operatives, factory rules, payment of wages, and working-men's certificates.

(4) The instruction of apprentices in the trade.

When the inspector produces his commission, issued yearly by the chief administrative officer of the province, the factory owner or manager is bound to permit him to enter the shops and the dwellings of the operatives at all times, but in the night-time only when the shops are running. The owner or manager has a right to accompany him during the inspection.

The inspector is authorized to put questions to any person employed on the premises on subjects within the scope of his official cognizance, if necessary, without the presence of witnesses, avoiding, as far as possible, any dis-

turbance of the business. If entrance is denied to the inspector, or information refused, or employés are prevented from giving the information asked for or urged to make false statements, the owner or manager makes himself guilty of an offense punishable under the factory code, unless the ordinary penal code is applicable. When the inspector finds that the factory laws and regulations are neglected or violated, he is obliged to insist upon an immediate correction of the failings or abuses. Should it be refused, he has to notify the proper authorities in order to enforce compliance through regular official action, and such authorities must in their turn notify the inspector of their action, from which he has a right to appeal to a higher instance.

Whenever the health of the employés appears to be endangered through the methods used at any manufactory the inspector may ask the proper authorities to secure the assistance of experts and physicians in making an investigation, and if the defects charged by the inspector are found to exist, the expense is to be borne by the owners. It is further made the duty of the inspectors to assist the manufacturers in complying with the law, to mediate between the employer and the employed when differences arise, and to try his best to maintain good relations between them.

The inspectors are required to report yearly to the minister of commerce, containing a list of the accidents met with by the operatives in the discharge of their duties, with their causes, and with suggestions of such legislative or administrative measures as may be in the interest of both employers and employed.

The inspectors are bound by their oath not to divulge any information they may become possessed of concerning the business condition or management of different industrial establishments, and particularly all such information the secrecy of which is enjoined by the owners of factories. A violation of this rule, and the use of the acquired knowledge of such secrets for his own benefit, either during the term of office or after, is punished by imprisonment from three months to two years, unless the ordinary penal code provides a severer punishment.

An inspector must not be engaged in any industrial business, either himself or by proxy, or be employed in any capacity in connection with such business. He is not allowed to accept compensation of any kind or nature from the employers or workmen, and is bound to refuse their hospitality if offered.

Fourteen inspectors of factories and a general inspector have been appointed under the law. During the first trial voices were loud prophesying the certain failure of the institution. The manufacturers were mostly hostile to the system of inspection, trying to impede its workings, and workmen were dismissed in some cases for bringing their grievances before the inspectors.

In regard to the enforced reduction of the hours of work from twelve to eleven, it was asserted that it would cripple Austrian industry in its struggle with foreign competition, but the evil prophesies have not been fulfilled, and the system of factory inspection has by this time become popular even with the employers of labor.

The first annual reports were made in 1885, and the reports for the year 1888 have recently been published. From the latter it appears that the factory inspectors have prevented many a strike, caused the redress of numerous just grievances, and brought about the adoption of measures in many factories for the protection of the operatives against accidents and injury to health.

In the course of last year the factory inspectors received 2,780 applications for advice, assistance, intervention, and mediation from factory operatives and 1,350 applications from employers. They intervened successfully in favor of the operatives in 1,785 cases, and refused 757 such applications as not being well founded. During the same time the inspectors rendered opinions in 3,490 cases, and took part in 1,590 commissions and investigations. The number of orders and directions given by them in regard to better arrangements, ventilation, heating, lighting, etc., exceeds, in the same period, 10,000. The number of factories and shops inspected by them was 4,068, as against 4,190 during the previous year, with 270,000 operatives. There are in this Empire about 370,000 establishments subjected to the supervision of those officers, and since the creation of the present system of inspection until the close of last year there were 16,000 premises inspected. Hence it would appear that the number of inspectors is far too small for a comprehensive and thorough working of this last in the early period of its existence.

CHARLES JONES,
Consul.

UNITED STATES CONSULATE,
Prague, May 30, 1889.

COAL MINERS' STRIKE IN GERMANY.

FIRST REPORT BY CONSUL-GENERAL MUELLER, OF FRANKFORT-ON-THE-MAIN; SECOVD REPORT BY CONSUL WARNER, OF COLOGNE.

FIRST REPORT.

The strikes in the coal districts of Rhenish Westphalia, Saar, Aachen, Silesia, and Saxony have now come to an end and miners again resumed their work; some by reason of concessions made to their demand, others, and perhaps the greater number, by force of circumstances, and so it happens that peace reigns again in those mining regions where for weeks gigantic strikes were raging, and where, in consequence thereof, excitement, consternation, and despair prevailed. To predict that such a formidable event might occur in parentally-governed and well-disciplined Germany, where outbreaks of that severe nature were thought to be things or impossibility among a people reputed as so loyal, humble, law-abiding, so unpretending and peaceful, would have been considered madness, if nothing worse. Yet the strikes have come, and come suddenly with a vengence, and in dimensions never witnessed before. To behold in Westphalia ninety thousand people on a strike for wages, in a mining district of not more than 20 square miles, is a spectacle

of a saddening and tragical character indeed, and the miners' suffering must have been great when they ventured upon the uncertainties of a strike movement.

Their complaints are as manifold as their causes of dissatisfaction. Not the least of these is the harsh, inhuman, and brutal treatment they receive from their masters and the managers of mines, and there is no diversity of opinion prevailing on this point. No sympathy is shown to this poor class of people by their employers, and no interest is manifested for their mental and economic welfare.

Their demands are not confined to the wages question alone, but include the hours of labor and the compulsory extra shifts to be worked; and it may be asserted that the miners' pretensions are even as much concerned with the hours of labor in the strictest sense, and that great stress is laid on the reduction of the working hours. An eight-hour shift is a demand in the interest of humanity, if it were for no other reason, the temperature in many mines being so high, owing to the heat of the earth, that a lengthy stay is almost unbearable and exceedingly injurious to health. But men in Westphalian mines have to work eight hours, and in Silesia and Saxony ten hours a day, exclusive of entering and leaving. The miners' average earnings range from 450 to 750 marks per annum, equal to about 40 to 55 cents a day, say 55 cents for the performance of a day's work of the hardest kind and that is so injurious to health and imperiling to life. With this scanty pay these struggling men are expected to support themselves and their families even at a time when rents, clothing, and all necessaries of life are dearer than ever before, and where the prices of coals have considerably improved, and where mining companies are doing a prosperous, profitable, and high-dividend-paying business. Do not these facts by themselves constitute a mockery to the principles of humanity and to modern civilization, and an indictment of the companies concerned? And yet for these scanty wages, which were even less in years gone by, these miners have endured for many years the hardships of their work, and now they have thrown up work, not to realize exorbitant claims, but simply to have their yoke slightly eased and their wages slightly increased at a time when they, in the face of the great improvement in prices and the attendant prosperity of the mines, ought to participate in their advantage to a commensurate extent.

The prices of coal advanced last year, especially in the strike territory, but the wages of the miners underwent no corresponding increase; and this explains the fact that public opinion fully sympathized with the struggling miners. And if it is further considered that through the cessation of work not only those directly concerned are injured, but also enormous losses are inevitably caused to the public at large, we must wonder at the reluctance of the mining operators to concede what, for mere justice's sake, they should have conceded without coercion. The miners, during the continuance of the strikes, always manifested good will and fair disposition towards a compromise of the difficulties between them and their employers, and their behavior,

with slight exceptions, was peaceable and orderly, a fact which is conceded on all sides. The men who did not join in the movement and who were continuing to work, were not hindered or molested.

The termination of this wages movement was a pressing necessity. The power and means of the contending parties were too unequal to permit the greater number of miners longer to continue the strife, while the companies, owing to the great public pressure, could not help making at least some concessions to the claim of the miners. With the advice and generous assistance of some members of Parliament and on the exhortation of the Emperor himself, who was appealed to and who so kindly received the representatives of miners and mining companies in audience, a compromise was stipulated at Essen, by virtue of which work was resumed with reluctance by some, with bitter feelings of disappointment by others.

In view of all these circumstances, and from personal observations, I have arrived at the unpleasant opinion that the compromise under which the work was resumed will prove to be an armistice only. The trifling concessions made by the operators are far from being satisfactory to the miners. None of the causes from which the strike originated have been removed or materially modified, and the worst of all is that many of the companies, now after the work has been resumed, refuse to comply with or to abide by the Essen stipulation.

The strike movements are not confined to the coal district. They extend to numerous other branches of industry in other parts of the country, and in appreciation of the fact that Germany can not any longer delude herself with the belief that she is to be exempt from that epidemic and life-threatening calamity, plans are being proposed from all quarters for the cure or diminution thereof. Intelligent and well-disposed people seem to agree that the establishment of tribunals enjoying the confidence of the two factors of production was, under the present economical conditions, a pressing need of industry.

I quote from Kuhlow's German Trade Review the following remarks on that subject, which seem to me worthy of consideration:

> While at present the possessor of a works or a factory takes into consideration alone the questions affecting the interests of his men, making most important decisions which affect both himself and his work-people without any opportunity being afforded for an exchange of views between masters and men, so that the latter might make known their complaints and wishes, the establishment of a workman's committee would render possible the mutual discussion of questions affecting the interests and requirements of both sides. All matters concerning the men, such as, for instance, wages and hours of labor, would only be decided after an exhaustive examination by both parties. It is evident that by these means innovations could, and in the majority of cases would, be avoided which at present, as they are only decided by the one side, regularly provoke resistance on the part of the men. It may further be expected with confidence that when such a committee is instituted it would have the effect of restraining the men from advancing pretensions which might be detrimental to the productive capacity of the business. Just demands would be made in moderation by both sides, and doubtless they would be more readily conceded than at present. A labor committee as an institution of every single work is, without doubt, an important means of bringing closer together the master and his

employés, and of lessening, to some extent, social inequalities, besides reducing to a minimum the probabilities of discord between the two parties. The want of such committees is especially felt in view of the large and increasing number of industrial companies. In such cases there can be no direct personal relations between employers and employed, and the one aim and object of those who have charge of the management is, naturally, to obtain the highest possible profit for the shareholders. The social connection is necessarily non-existent, and it is an imperative necessity in the interest of companies that something should be created in its place, such as a duly constituted workmen's committee. Labor committees would not, however, always be in a position to bring into agreement the demands and concessions and so avoid dissensions, strikes, and lock-outs. In such cases the necessity becomes apparent for some court of appeal outside of the single works or groups of works, and this may be found in the establishment of boards of arbitration.

The official returns of the coal production of Germany in 1888 were as follows: Total, 65,321,834 tons, valued at 341,043,000 marks; in Prussia, 59,472,500 tons, valued at 291,918,891 marks; in Saxony, 4,297,649 tons, valued at 36,512,749 marks. Of the Prussian production there fell to the mining districts of Dortmund 33,223,614 tons, valued at 759,458,497 marks; in Breslau, 17,642,284 tons, valued at 73,011,548 marks.

According to the figures of the imperial statistical office the average consumption of coal per head of the population in Germany was, in 1876–'80, 850 kilograms per annum, and in 1881–'86 it had advanced to 1,062 kilograms. In 1887 and 1888 a further increase of 13.77 per cent. took place.

The far-reaching influence of the strike need therefore occasion no surprise, not more than the attempts which are being made to remedy the prevailing scarcity in coal by importations from Bohemia, Belgium, and England. It is, however, not merely a question of the supply of our own country, but also of others—as Holland—which have hitherto been in the habit of obtaining their requirements from Germany. At present Holland is getting coal from Belgium and England. In 1888 Germany received from abroad 649,048 tons of coke, 6,207,357 tons of pit coal, and 5,194,428 tons of lignite more than she exported.

Some statistics on the coal consumption of the world may not be without interest on this occasion. In 1888 there were about 800,000 steam-boilers at work, producing steam for about an equal number of engines of much over 9,000,000 horse-power; at present, therefore, there may well be about 10,000,000 at work. Of this number the half, or perhaps less, are stationary engines, working at most from ten to twelve to sixteen hours daily, and the remainder are on board steamers working irregularly. On an average 6,000,000 horse-power per hour may be obtained from the consumption of coal. The coal required per horse-power on an average is 4 pounds per hour—more for the small boilers, less for the large ones—consequently the coal consumption for the generation of steam may be estimated at 240,000 centners per hour (1 centner = 113.44 pounds). The requirements of fuel for the gas-engines of the world may be estimated at 70,000 centners per hour. We have no information on the consumption of gas for heating purposes; here in Germany it is not considerable, in the United States it is of such importance that 20,000 centners may be put down as the total consumption. For the extraction of

metals about 180,000 centners per hour is necessary. The consumption for industrial purposes is estimated at 100,000 centners. The requirements for domestic purposes will be covered by 200,000 centners. Thus, a total consumption of 1,100,000 centners is arrived at; that is to say, that over 1,000,000 centners are consumed hourly or 25,000,000 centners daily. The coal production of the world may be estimated at eleven or twelve milliard centners annually, which makes 30,000,000 to 33,000,000 centners daily and 1,250,000 to 1,333,000 centners hourly.

JACOB MUELLER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort-on-the-Main, June 3, 1889.

SECOND REPORT.

The coal miners' strike which suddenly broke out recently in the coal districts of Germany being one of the greatest and most serious strikes that has ever occurred in this country, it will no doubt prove interesting to give a short outline of the cause and effect of this contention between employers and employés.

The strike originated first in Westphalia, in the Kingdom of Prussia, about a fortnight ago. It commenced without the slightest warning on the part of the employés, and thereby ignoring the law in Germany requiring all workmen to give fourteen days' notice to their employers before quitting work. The strike spread rapidly in nearly all the coal districts of Germany, and the number of workmen that were on strike in Westphalia alone may be put down at one hundred thousand. At the outbreak of the strike public sentiment here seemed to be in favor of the workmen, but it soon turned against part of them when it was found out later that they were not proceeding with their demands strictly in accordance with law. Consequently the Government was forced to cause arrests to be made of some of the leaders of the strikers, and this has had the effect of quieting the more orderly ones and thereby, it may be said, of almost putting an end to the strike.

The losses and embarrassments that this strike has caused to the manufacturing industry in general has been very great, since many iron and steel works had to partially stop work from want of coal. The loss to the coal mines may be estimated at many millions.

For some years past the coal trade, owing to the depressed state of the iron and steel trade and, in fact, of almost every other leading trade, had suffered considerably. Consequently the price of coal had been receding from year to year, which likewise led to a corresponding decline in miners' wages. Since the past year, however, a marked improvement in trade has been going on, and the prices of leading articles have advanced. The coal trade has likewise shared in this general improvement, so that the mines have latterly

been worked to their utmost capacity in order to supply the increasing demand. Mines which had formerly been worked at a loss were in a fair way of paying good dividends. Owing to this fact the stock of many of the coal mines had advanced considerably, and the miners, not blind to this improved condition of affairs, came forward with their demands for an increase of wages and a decrease in the hours of labor. The demands having been in the first instance refused by the employers, the men struck work en masse.

The terms demanded by the miners were as follows: Fifteen per cent. increase of wages and a limitation of a day's work to eight hours, including the time occupied in descending and ascending the pit. The employers were willing in principle to consent to an increase in wages, although they maintained that the men have had already an increase of about 8 per cent. in 1888; but before finally consenting they insisted that the men should first resume work. As regards the second demand of the workmen—the limitation of the working hours—the employers stoutly refused to grant it.

Such has been the state of affairs during the past fortnight. As neither side showed any disposition to yield, the strike became more and more serious and calamitous, so that the Government, and even the Emperor, offered to mediate in the interests of both parties. His Majesty consented to receive deputations from both sides, and has acted with the greatest impartiality and justice in these negotiations. He warned the men that no grievance of theirs would be listened to if they urged their demands in an unlawful way, but if they returned to their work he promised them that he would personally see to their claims being properly examined and attended to. To the employers he strongly recommended that they should come to terms with their workmen, and make such wise and just arrangements with them as to prevent all possibility of a strike of such magnitude occurring again. The result of these interviews has been most felicitous. Both parties have reconsidered their position, and have come to a mutual agreement. The strike is now virtually at an end, 80 per cent. of the men having already returned to their work. An increase of wages has been agreed to, and the hours of actual work in the mines are fixed at eight, not including the time occupied in descending and ascending the pit, which is not to exceed half an hour for each way. An understanding has also been arrived at for dealing in future with any serious differences which may arise between the respective parties.

It has been a great relief to the public that the strike has thus terminated. The loss and inconvenience which the same has caused have been very great; but a continuance of the strike would undoubtedly have led to much greater disaster, as even the supplies of coal from Belgium and England, which have been imported at fabulous prices, threaten to fall off or cease altogether, owing to difficulties of a like nature. What materially aided the miners in obtaining a successful settlement of the dispute has been the sympathy which the movement secured from the public, as by common consent the wages of the miners were considered too low under the improvement in the condition of the coal trade.

The following estimates of the average wages earned by all classes of laborers engaged in and about the principal coal mines in Prussia have been made by the ministry for public works, and are official. They represent the net earnings, that is, exclusive of all costs to the workmen, and their contributions to the miners' general and sick fund.

Coal districts.	Contributions to miners' general and sick fund.			Net earnings.		
	1886.	1887.	1888.	1886.	1887.	1888.
Upper Silesia	$0.43	$0.43 1/10	$0.44	$116.62	$117.09	$122.80
Lower Silesia	.47 1/10	.50 1/10	.48 1/2	139.46	148.98	149.94
Halle	.52 1/10	.50 3/4	.53	160.88	149.64	155.41
Dortmund	.61 1/10	.61	.64	183.73	189.44	205.39
Saarbrücken	.67 1/10	.68	.69 1/2	192.54	193.73	200.39

It must be observed that the above given wages represent the average of the entire category of workmen. In general those who work in the mines, that is, the real miners, earn considerably higher wages than those who work above the mines. For example, the following shows the average wages of the different classes of workmen in the Dortmund and Saarbrücken district during the year 1888:

Class of workmen.	Dortmund.		Saarbrücken.	
	Earnings per shift of 9 hours.*	Earnings per year.	Earnings per shift of 10 hours.*	Earnings per year.
Miners exclusively (consisting of from 65 to 70 per cent. of all the workmen)	$0.70 1/10	$222.76	$0.72 1/10	$210.63
Other men employed in the mines (12 to 14 per cent.)	.55 1/10	181.60	.61 1/10	174.93
Men employed above the mines (15 to 17 per cent.)	.56 1/10	189.68	.60 1/10	169.21
Boys (one-half of 1 to 3 per cent.)	.24	72.82	.28 1/10	78.77
Average	.64	200.39	.69 1/2	200.39

*Including the pit descent and ascent.

It will thus be seen that the actual wages earned by the real miners in the Dortmund district per shift of nine hours, including the time occupied in descending and ascending the pit, amounted to 2.96 marks (70 4/10 cents), and in the Saarbrücken district, per shift of ten hours, to 3.06 marks (72 8/10 cents). In the Dortmund district the year's earnings of the workmen in 1888 show an increase of about 8½ per cent. above those of 1887.

The average hours of work per shift, including the descent and ascent, in the different coal districts of Prussia, may be approximately given as follows:

	Hours.
Upper Silesia	12
Lower Silesia	10
Halle	11¾
Dortmund	9
Saarbrücken	10

The following table shows the quantity and value of coal mined in the Dortmund district, where the strike first originated, from 1879 to 1888, also the number of men employed and wages earned:

Year.	Men employed.	Quantity of coal raised.	Value.	Annual gross earnings of each workman.	Net earnings of each workman per shift.
		Tons.			
1879	78,992	20,380,420	$20,158,600	$176.12	$0.55
1880	80,152	22,502,121	24,514,000	189.92	.57 5/8
1881	83,330	23,642,548	25,775,400	195.63	.58 1/8
1882	89,718	25,873,428	28,250,600	206.10	.62 5/8
1883	97,564	27,862,956	31,463,600	215.39	.64 1/8
1884	100,953	28,403,258	32,130,000	208.25	.63 3/8
1885	101,829	28,970,523	32,415,600	205.63	.63 1/8
1886	99,787	28,397,317	33,010,600	200.15	.61 1/8
1887	99,534	30,150,238	33,380,000	210.15	.61 3/8
1888	105,428	33,229,614	37,937,200	216.58	.64

The subjoined table will be interesting as showing the total production of the coal mines in the Empire of Germany, together with the average price per ton, during the years 1883 to 1888, inclusive:

Year.	Coal.		Coal (brown).	
	Production.	Average price per ton.	Production.	Average price per ton.
	Tons.		*Tons.*	
1883	55,943,004	$1.25	14,499,644	$0.64
1884	57,233,875	1.24¼	14,879,945	.63
1885	58,320,398	1.23½	15,355,117	.62½
1886	58,056,598	1.23¼	15,625,986	.61 1/8
1887	60,333,984	1.22 1/8	15,883,634	.60¼
1888	65,321,834	1.24	16,541,977	.58½

This great strike has caused dissatisfaction among other workmen, and they have likewise struck for higher wages. However, it is impossible at present to predict the result of these strikes on the economic welfare of the country, and they are considered by many to be a very serious matter for Germany.

WM. D. WAMER.
Consul.

UNITED STATES CONSULATE,
Cologne, May 25, 1889.

STOCK COMPANIES OR TRUSTS IN GERMANY.

REPORT BY CONSUL-GENERAL MUELLER, OF FRANKFORT-ON-THE-MAIN.

INTRODUCTORY

I beg to submit a report on the incorporation fever now prevailing among some classes of German manufacturers and capitalists and people seeking high-dividend-paying investments. In writing it I am actuated by the thought that the information might serve as a forewarner to our people of an impending crisis, industrial and commercial, that in my judgment is sure to visit continental countries before many years will have passed. Things social and industrial are far from being reassuring no matter what scribes and scribblers say to the contrary. I have always looked distrustfully on existing social affairs here, and in my annual reports have never failed to express myself to that effect. Nothing would have pleased me better than that experience would have demonstrated that I had been mistaken in my views; but it is to my regret that I have no reason to change them. Social conditions here are bad and fraught with danger, and recent events are proof thereof. I refer to the gigantic strikes by which Germany was so unexpectedly and suddenly visited, and which have prevailed for the last few weeks. No revolutionary or anarchistic tendencies lie at the bottom of these strikes; it is a spontaneous outgrowth of unbearable conditions, and a mere struggle for existence by the thousands and hundreds of thousands of men, most loyal, conservative, and most unpretentious. In Rhenish Westphalia, on a territory of not more than 20 square miles, we behold the spectacle of 90,000 people revolting at continued work at starvation prices to enlarge the profits of those for whom they do work. Think of it, that even in times when mining companies realize much better prices for their coals than for many years past these struggling miners receive wages ranging from $125 to $185 per year, and that they have to strike for a small increase thereon, while at the same time millions of surplus capital is eagerly seeking investment in undertakings which, if successful, tend to render worse the condition of the working classes, and if not successful will be ruinous to many unsuspecting subscribers of stock and greatly injurious to the public interest.

STOCK COMPANIES AND TRUSTS.

Among the thousand contending interests of politics and diplomacy the varied business interests drop almost completely out of sight. As a consequence years of devastation overtake us which keen insight and care could have evaded or softened. It is only when we stand amid the ruins of tottering and falling establishments, whose solidity was never questioned, that we feel the awful weight and relation of business interests to be even greater factors in public life than tricks of politics or schemes of diplomacy. The

periodicity in which years of panic occur indicates that there are forces working in business life, causes of effects the study and appreciation of which would certainly prove interesting. Business men after a time grow careless, negligent, and heedless, and it is at such times that sharpers take hold of all manner of schemes and play upon the people's purses. However trite the saying, "A burnt child dreads the fire," it does not prevent the burning of others. Just now Germany is showing symptoms of a business fever similar in many respects to that which terminated in the crash of 1873. It is the "gründungs-fieber," a name applied to the creation of industrial enterprises, or to the changing of private undertakings into what are called "actien gesellschaften" (stock companies). Expedient and business-like as some of these changes undoubtedly may be, there are many of questionable character—schemes of chance, if not of deception. The bourse papers are covered in whole pages with offers and inducements to invest in the capital stock of these concerns. Even houses and firms of traditional stability are transforming their business into stock companies. This new method of modern financiering is just now awakening interest and demanding attention. Millions upon millions of stock is being offered for sale, and the unsuspecting entrapped into purchase. Banking firms lend support to the consummation of the enterprises, and the press, otherwise silent, lends its columns to the boastful announcements of the schemes. Backed by financiers and bankers, silently encouraged by public papers, the people rush so eagerly to buy shares of the stocks as to crowd each other at the distributing offices. What is the cause? In what does the present system differ from the past? What will or must be the inevitable result? These questions must be answered, for any great movement of this kind affects financial, industrial, and, most of all, the social and political life. The first cause is the great decline in rates of interest consequent upon enormous supplies of money, even at a time when business everywhere, and especially in Germany, is very active. This decline, especially in State securities, has led men to look elsewhere for better paying investments. Tempted by the peaceful outlook and increased development in almost every branch of trade, they buy. Unsuspicious of evil, conservative, and careful as the Germans are, their first move was towards foreign securities paying high interest, but for want of absolute confidence in the same they invested in such securities only a fraction of their capital. The large dividends of certain stock companies during a series of years led capitalists towards these stock companies and towards an increase in their number as a fair field for new and profitable investments. Thus far they have generally been meeting with success. The natural result was to force up existing old stock and to create a demand and a chance for new, and this demand was answered by the new schemes.

The year 1884 saw a law enacted intended in some way to regulate stock companies so as to take from them their dangerous character and secure shareholders. It went further and tried to put obstacles in the way of their creation. This shows that the Government then regarded them as dangerous to

the public good. As sometimes happens, legislation, far from realizing its purposes, defeats its own object and ends by aiding that which it proposed to defeat. The law of 1884, compared with the previous one, requires a more definite and detailed statement of affairs in case of private companies being changed into stock companies; it requires a public examination. This detailed statement, truthfully made up and published, made the owners of the old concern much less responsible as members of the new company than they were in the old. The law rather encourages the transformation of private industries into stock companies. In the seventies the fever took the form of creations of new concerns, and now it is principally the changing of old ones into another kind — the changing from private ones into stock companies.

There may not be so much danger in the present system as in that which preceded the crash of 1873, but there is enough of it to bid men pause. The change usually follows and is based upon the results of most prosperous years. Not only this, but stocks are based upon prosperity, valued at exorbitant, if not fictitious, prices. The bonus paid for the good will and the reputation and customship of the old owners play a prominent figure in the modern schemes of organizing stock companies. Where these values will go to in times of war or of lasting business depression is not hard to tell. The most of these new concerns, to make a favorable showing, begin by extending their business over other branches of trade and over larger territory, and this leads to increased competition and usually terminates in disaster.

The present changing fever here has grown out of the condition of the money market referred to above and out of the favorable condition of many branches of industry and of the change of front in the law of 1884. The basis to-day is perhaps safer than the one preceding 1873–'74, but is still fraught with danger.

Great changes in industrial life must result from the new system. Time was when the personal influence and personal efforts and care growing out of private ownership were deemed essential to the successful running of industrial enterprises. To-day man seems to think that stock companies can be made much more productive in the long run than a concern of the same kind and size conducted by private owners. It has been proven that stock companies enable the nation to increase production and meet larger demands quicker than it could ever hope to under the other régime. Stock companies can now more readily undertake new schemes because of the abundance of capital and backing of many than was ever possible to private enterprise. Stock banks have much more spirit to undertake tasks than have private banks. So stock companies can much more readily buy up patents, establish branch houses abroad, etc., than could the private concern. Striking examples to illustrate this fact are to be found in the colossal breweries in every large German city. Such structures could hardly have grown out of private capital and industrial enterprises.

TECHNICAL INFLUENCE.

The new concerns can do more to secure the highest technical excellence than their predecessors, for they have more money, and technical talent works for pay. This is shown in the various metal, chemical, and textile industries. Krupp, Siemens, and others feel themselves so closely linked personally with the concerns established by their fathers as to hate the very idea of changing their business into a stock company; but it is not at all certain that even these gigantic industrial establishments can escape from the eventual necessity of becoming incorporated.

WINNINGS.

The winnings will be larger and spread out over a greater number of persons. But the people of the middle class and people of limited means can not participate in the better class of these enterprises, the law having fixed the minimum price of any one share at 1,000 marks, by which provision of the law it was intended to hinder poor men from investing in risky, hazardous, and insecure enterprises. The provision to have the share of stock fixed at low figures would doubtless result in catching numbers of unwary persons, relatively poor, who can ill afford to risk the little they possess.

From a humanistic stand-point it must be decided that the new system is an improvement upon the old. The strife between capital and labor will, under the new system, take a more defined and aggressive character. Corporations have no souls, and under the new system the personal and moral influence of the members of private concerns will disappear entirely. The humane thinking manufacturer, who hitherto has taken some personal interest in the well-being of his employés, who had assisted him to make his fortune, will soon be replaced by a board of directors, who generally have less sympathy for the workers of the machines than for the machines themselves. Receiving a percentage of the profits made by the concerns, these directors will be too often tempted to screw down wages. The stockholder never sees his workmen and does not come in personal contact with them. He knows little or nothing about their mental or social condition, and only knows of them through the directors. That stock which pays best is preferred, and shareholders, in receiving their dividends, seldom stop to inquire into the condition of the men who by their work have largely assisted to earn them.

In this change of relations between employers and employés is the germ of new troubles in the social-political conditions. Stock companies compelled to report the status of their affairs can be easily watched, and a knowledge of their profits can be easily obtained by the workmen. This knowledge will enable the workers to know just when to demand increased wages. Against these demands the employers will seek shelter in combinations having for their object not only the defeat of the employed, but also a regulation of the supply, a combination that will force and keep up prices. The next move will be union of the workmen in one large organization, like our "labor league,"

ruled and governed from a central place, and then as a new phase of the struggle for existence the war between employers and employés will be permanent. What the consequences thereof will be no man can foresee, but I do apprehend that ultimately they will and must be disastrous, unless present methods of production shall be materially changed or modified.

JACOB MUELLER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort-on-the-Main, May 27, 1889.

RUSSIAN AGRICULTURE AND CEREAL TRADE.

REPORT BY CONSUL-GENERAL WAY, OF ST. PETERSBURG.

RUSSIAN MONEY, WEIGHTS, AND MEASURES.

Wherever it has been practicable in this report to reduce Russian standards of value, weight, and measure to the American equivalent (in accordance with the practice of this consulate-general) that rule has been observed, but as the element of value, the paper ruble (which is a legal tender for all debts and dues save those payable to the customs), is intimately connected with many of the tables and statements herein contained, and, as it fluctuates from day to day, to avoid confusion and any erroneous conclusions based upon these statistics, it has been found necessary to prepare some tables according to the Russian standards. By the aid of the following any measure may be be reduced to the American standard, whether they be of value, weight, capacity, or length:

The paper ruble of 100 copecks, by which values are estimated, fluctuates. It was worth 75 cents or its value in gold when issued. It fell to 37½ cents in the latter part of 1887. Its average value during the time embraced in this report was 40 cents. A pood Russian is equal to 36.1 pounds; a pound is equal to 14 ounces; a chetviert, 5.956 bushels; a vedro, 2.7 gallons; a deciatine, 2.69 acres; a sagen, 7 feet; an archine, 28 inches; a foot, 12 inches.

INTRODUCTORY AND EXPLANATORY.

The changes in the manufacturing industries of Russia have been so slight and unimportant since the annual report made by this consulate-general twelve months ago that any statement in regard to most of them would seem like repetition. Therefore, it has been deemed best to confine this article almost entirely to the agricultural condition of the Empire. Knowing that in the growth and exportation of cereals America has become its most powerful rival, the subject must prove to be of vital interest and importance to our people.

An analysis of the exports of cereals from Russia during the past two years, as compared with former shipments, shows an abnormal increase. This is due to three causes; First, the enormous crops gathered from both the

black lands and the arable prairies; second, the depreciation of the paper ruble; and third, the foolish practice or systems of "corners" in the United States. Russia has had exceptional seasons for the growth of cereals. Abundant and timely rains matured the crops, and brilliant sunny days enabled the teeming millions of harvesters to gather them in superb condition. Such yields were never known in Russia before, both as to quality and quantity. Despite the rude, imperfect system of farming, which would excite the contempt of a Kansas or Dakota grower, the yield was enormous. To understand the exact condition of the circumstance surrounding the Russian farmer a knowledge of the geographical divisions of the Empire is indispensable.

GEOGRAPHICAL DIVISIONS.

The forest zone.— Russia is divided into four zones, the divisional lines running from the Ural Mountains in a general southwestern trend. The largest zone, known as the forest zone, is the most northerly. There flourish the larch, the spruce, the pine, and that omnipresent tree the birch. Plantations are few and far between. It is a region of interminable forests, with scattered farms and a sparse population. There is an incessant warfare between man and nature. The grain planted in spring is often killed after its first attempt to pierce the soil, and should it escape the insidious attacks of the frost king in May and June, a premature visit from his majesty in September may blast the hopes of the poor "mujick." Very little grain is grown here; hardly any for export. It is a contest, an unending contest, with the elements for the maturity of those cereals necessary to subsistence. Still, year after year, despite failure, the contest continues. When crops fail the peasant relies upon his forests, which he cuts down and sells to the less favored wooded portions of the Empire. In the United States western settlers have had similar experiences, with this difference—in the United States there has always been a touch between the frontier and civilization. In the forest zone of Russia the peasant is often as far removed from civilization as the aboriginal Indians or the inhabitant of central Labrador. As a sequence, only a small portion of the grain grown in this forest zone ever finds its way to a market. There are no railways. Only such as are contiguous to cities, sea-coast, and rivers can afford the expense of transportation.

The black lands zone.—The second zone, running in an irregular conformation to the southern boundary of the forests, and known as "the black lands," is the garden spot of Russia. It extends from the Kingdom of Poland far into the province of Siberia. It is a fine, disintegrated soil, evidently the bottoms of long-forgotten seas or lakes of fresh water, fat as the deltas of the Nile or the bends of the Mississippi. In all its length and breadth it is doubtful if a solitary specimen of a pebble as large as a barleycorn could be found. It needs no manure—no fertilizer. Year after year enormous crops are raised upon its surface, only one-tenth of which is cultivated, and the only reason that can be given for the parsimonious utilization of this surface is the lack of transportation. A judicious system of railroads pene-

trating this zone would enable its cultivation to overreach every cereal-growing community in the world; but as long as the railways are constructed in Russia for military purposes only, so long must this garden spot remain, in its greatest part, the unclaimed granary of the world.

The arable steppes zone.—The third zone, known as the arable steppes, conforms in its general direction to the black lands. Here fertilizers or manures show their beneficial effects. It resembles our western prairies, having no forests, and the wild grasses of natural growth are often 7 and 8 feet high. It is an immense territory of about 266,000 square miles.

The barren steppes zone.—The fourth zone, known as the barren steppes, is devoted almost entirely to the nomad tribes of Russia in Europe and Russia in Asia. Agriculture is almost unknown, while immense flocks of sheep and other cattle feed upon the sparse herbage and maintain what to an American would appear to be a precarious existence.

Thus it appears that the arable lands of Russia in Europe (excluding, as a matter of course, the Kingdom of Poland and the province of Siberia) cover an immense territory, equal to 450,000 square miles.

WHEAT CORNERS.

The wheat grower of Kansas and Dakota will see at a glance the area of that fertile territory which, with the cheap labor of Russia, will always prove to be a formidable rival, and the merchants of Chicago and New York, who imagine by cornering wheat that they will control the markets of the world can always take into their calculations the product of this country as an effectual check to their operations. Every corner engineered in the United States makes an opportunity for Russia. Not one dollar is added to the import of wealth in America; but exports from our country being estopped, Russia steps in and gets rid of her surplus at remunerative prices, but still far below the prohibitive values established in Chicago and New York.

As long as Russia exists any attempt to force the western nations of Europe to pay artificial prices for American grain can but result in absolute failure. Perhaps if this fact were known corners would become rare and infrequent.

PEASANT PROPRIETORS.

A pamphlet issued during the past month by the statistical department of the ministry of domains asserts and proves by tabulated statements that in the growth of cereals (wheat, rye, barley, oats, buckwheat, millet, and other grain) the Russian cultivator is subjected to a loss of from 1 to 10 rubles per deciatine (2.69 acres) each year, save where he devotes himself entirely to wheat.

Is there any wonder then that the price of land depreciates yearly; that the peasant proprietor finds himself at the end of his bounteous harvest unable to pay his factor; and that his crop, horse, and cow must go to the middleman to meet his obligations?

The peasant proprietor has so many difficulties to contend with that the wonder is he remains a proprietor in any sense of the word. He has, first, his annual payment upon his land (purchased, it is true, for lengthy and easy payments from the Bank Foncier, the representative of the Government); second, he must pay his municipal and imperial taxes, which year by year become more burdensome; third, he has to borrow money in most instances to buy seed, farming implements, and food for his family until his crop matures. The last obligation is the hardest, and in its fulfillment he is usually made a bankrupt. He must pay his factor the original debt, with the interest, which may be 20 to 50 per cent. per annum. In every district (or what we would call a county) there is a capitalist, who, for usurious rates of interest, will advance everything necessary to support the family. From him alone can the peasant expect the cash necessary to make the crop.

The harvest ended, each man brings his grain to market. Hoping to realize a more remunerative price by carrying his produce to a central or larger market, he makes application to travel. Here the factor steps in. In conjunction or in collusion with the local police, obstacles are thrown in his way week after week. Ten, twenty, or one hundred are in the same predicament. Finally, with the local station or market glutted with the yield of a county, the factor steps in and agrees to take all the grain in sight for about 25 per cent. below its market value. They have no choice, and thus a crop grown at a cost of 25 per cent. interest frequently pays 25 per cent. additional after its maturity. Such a course means complete, swift, immediate ruin to the agricultural class. Is it any wonder that an economic crisis is imminent in Russia—a crisis so far-reaching that the Government does not dream of its extent or consequences? Sooner or later the "rural economics" of the Empire must engage the best thought of its statesmen, not to ameliorate or avert, but to treat and cure—to cure radically. It will not be the case of a sick man restored to health, but that system of laws which will protect the minor children who have escaped starvation. At present the statesmen of Russia legislate for towns and cities principally. They seem oblivious to the millions of peasants on the brink of ruin; but some day there will be a rude awakening, and Czar, senate, council, and ministries will realize that the most industrious and loyal inhabitants of the Empire are no longer on the brink, but have absolutely "fallen upon the charities of the country." It is no picture painted for pastime. I simply write facts that are known to every man in Russia.

The publication of this pamphlet is the first official recognition of the condition of the agricultural population.

Something is wrong, radically wrong, where, in the country of the Scythians, the ancient granaries of Heroditus; in a country fat and fertile as the deltas of the Nile, the hard-working, industrious, laboring Russian peasant loses money every year despite the most generous harvests—harvests the equal of which have not been seen in a quarter of a century, land decreases in value, and thousands are forced into bankruptcy.

I believe that but for two causes this agricultural crisis would have fallen upon Russia this year, and those two causes are, first, the attempted corners in the United States, which forced the western nations of Europe, after bad harvests, to add to the price of grain in their markets; and second, the decline in the value of the paper ruble (the purchasing medium), while the price of grain remained unchanged, yielding magnificent profits to exporters.

EXPORTS OF CEREALS.

Take as a proof of this the comparative exports of cereals from Russia during the past three years:

Amount of cereals exported from Russia during the years 1886–'88.

Kinds.	1886.	1887.	1888.
	Poods.	*Poods.*	*Poods.*
Wheat	79,335,000	118,617,000	133,927,000
Rye	59,948,000	72,710,000	99,501,000
Barley	33,192,000	48,353,000	65,270,000
Oats	33,763,000	59,666,000	86,804,000
Indian corn	19,694,000	26,514,000	15,836,000
Peas	1,335,000	3,517,000	5,840,000
Groats	598,000	1,367,000	2,166,000
Buckwheat	2,542,000	2,452,000	1,908,000
Divers grain	511,000	1,101,000	1,765,000
Wheat flour	2,538,000	2,422,000	2,684,000
Rye flour	963,000	1,303,000	1,157,000
Flour from divers cereals	182,000	80,000	63,000
Bran	3,957,000	5,941,000	12,473,000
Total	238,564,000	344,049,000	479,502,000

It is not a question of quantity. Russia could, with efficient transportation, from her black lands alone (lands requiring no fertilizers) supply and feed the world. It is simply a question of price. Let American speculators put a prohibitive export price upon wheat and the Russian farmer furnishes the needed supply.

There was no such percentage of increase in the crop as in the exports of grain, as shown in the above table, but America's prices made Russia's opportunity. And should this condition of affairs continue — namely, the absolute loss on all cereals except wheat, the stoppage of supplies from America on account of artificial prices maintained — these would simply enable Russia to pursue her advantages for the supply of the world's bread consumption.

RUSSIAN STATISTICS.

Below I give various tables of production, values, and price of labor, which must prove interesting to the agricultural economists of the United States. The tables in reference to the amount of the crops produced I believe to be totally incorrect. A much greater quantity of cereals is produced in Russia than the most reliable statistics show. It is believed by many economists who have devoted much time and study to the subject that the total yield of

the last two crops in Russia was 20 per cent. greater than the official returns. In no other way can the enormous increase in exports be explained. Statistics are, however, imperfect, and much must be left to conjecture. Still, let us see what these official statements are.

Some very interesting facts in relation to the crops of 1886–'87 and 1887–'88 are contained in the report of the ministry of domains and the agricultural department, published a few weeks ago. The report is brimful of suggestive facts relating to the system of farming as pursued in this Empire.

The most interesting works, however, distributed by the ministry of domains in a few favored localities are "The Agricultural Department and its Cognate Industries, 1887," and "The Conditions of Domestic Agriculture in 1887." Both works are of great importance to all who take an interest in our country as a grain and meat exporting community. Facts are therein stated of great value to the scientific as well as to the practical farmer, the merchant, the statistician, and the student of political economy. These extracts are selected from some seven hundred and fifty pages, but as the volumes contain about fifteen hundred pages it will be seen that the subject has been simply touched here and there.

The report on dairy products and the nascent industry of the export of meat from the crowded pasture lands of Russia are alone worthy of full and exhaustive criticism. It is to be regretted that the available means are altogether incommensurate with the valuable information attainable. Russia possesses immense quantities of live stock, hundreds of thousands of square miles of inexhaustible lands, cheap labor, a population twice that of the United States, and, what will seem of grave importance to a large number of our public men, an almost prohibitive protection tariff. What the Empire of Russia lacks may be stated under three heads: (1) Transportation facilities; (2) intelligent or an improved system of farming; (3) capital. But in truth the first two may be said to be comprised within or dependent upon the third.

Undeveloped resources.—The time must come very soon when Russia will permit foreign capital to enter her boundaries on favorable terms and aid in the development of her resources. There are riches in this country that, taking the present natural growth of the people, could not be touched for centuries. To say that they shall remain undeveloped for all time, unless by Russian enterprise, is to ignore all the broadening influences of education and contact with other nations. Therefore, I feel sure that sooner than we think these vast resources will be brought into rivalry with the only other competing power—the United States. Contiguity with the non-producing nations aids her, while we are hindered, and it is only by vigilant enterprise and an intimate knowledge of what is being done that we can keep our advanced position.

It need only be said that in the following translated pages literary style has been sacrificed to a concise epitomizing of facts. Whatever discrepancies may appear in this report as compared with former papers are due to unavoid-

able causes. But as the facts contained herein are issued by authority, and in the last publication on the subject, they must be regarded as final. Whenever the ruble is reduced to dollars its value is taken at 40 cents, the average for the year 1887.

RUSSIAN AGRICULTURE IN 1887.

The winter of 1886–'87 was very mild throughout European Russia, except in the most eastern part, where there was an abundance of snow. Everywhere else there were scarcely any "sledge roads" before the 2d of January. In other places there was no snow except at the end of February and the beginning of March, when it fell in great quantities. The first half of winter was so warm that in some places in the province of Poltava farmers continued to plow the land until December. Towards the end of December frost set in, but not strongly. The coldest days were in January and February, during which months the thermometer showed 17° and 20° (Réaumur) below zero in the south; in the central provinces and north of Russia, from 20° to 25° below zero, and only in some parts of the eastern and northeastern provinces did the thermometer go to 30° below zero; but this frost only lasted a few days.

Spring appeared almost at the same time throughout Russia in Europe, *i. e.*, in the latter part of March, and in the western provinces as early as the first days of March. So it has been remarked that spring appeared very early for the northern provinces and rather late for the southern provinces. The thaw took place very rapidly, which had a good effect on the fields; still, in some parts further snow-falls took place, covering the fields with a coating of snow 28 inches deep.

After the 15th and even 20th of May (according to provinces) frost set in again, with strong northeasterly and northwesterly winds, and during the latter days of May the thermometer fell nearly (throughout Russia in Europe) to 2½° and even 4° below zero. In many parts farmers suffered from the condition of the weather. The loss was principally in cucumbers, fruit trees, early millet, and buckwheat in low places. Besides these, beet-root, in the province of Kieff; potatoes, in the provinces of Kovna, Penza, and Simbiria; clover, in the provinces of Kovna, Eastland, and St. Petersburg; and flax, in Yaroslaw and Orenburg, suffered greatly. Rain fell principally at the end of April and during the first days of May.

The first part of June (with the exception of the provinces situated in the south, west, and east of Russia) was cold, windy, and rainy. Especially low temperature was observed in the morning and at night, so that in some of the central black soil provinces the thermometer only showed 8° (Réaumur) above zero, and in other provinces, viz, Podolia, Moghilieu, and Smolensk, the temperature fell at night to 5° above zero. In the day-time the temperature only reached from 7° to 13° (Réaumur) above zero. Although July was better than June, still it can not be considered as having been fine, as the land could not dry. In the southern provinces, towards the latter part of the month, there were regular wind storms from northwest to southwest.

In the western part of this district the thermometer showed +30° and +35° (Réaumur) in the shade and +40° and more in the sun.

Between the 24th and 28th of July there was white frost in the eastern part of Russia; also in the Baltic provinces and those of Smolensk and Moghilieu, and the temperature fell to 2° below zero.

In this part of Russia millet and buckwheat failed, and in the western part potatoes and peas.

The temperature of August was above the average in the south, while there was much rain in the northern provinces. The storm which took place on the 7th of August was accompanied by thunder and hail, especially in the province of Poltava, where it caused great destruction. September, with the exception of the last few days, was very warm in most parts of Russia.

In most parts of the black soil provinces of Russia the work was begun at the regular epoch; but only in the southeast (comprising the provinces of Simbiria, Samara, and Saratoff) and in the southwest (provinces of Tchernigoff and Poltava), on account of coldness and drought, was work begun by the end of March. There was much variation in the time at which the fields were plowed in Russia. The weather during this work was fine, and all was ended in due time.

Although there was little snow in the beginning of winter, the great quantity which fell early in the spring gave sufficient moisture. Some provinces, however, suffered on account of cold coming on during the thaw, creating fields of ice, covering the surface of the earth, and freezing the crops to the very roots. Those crops suffered most which had been sown with seed taken from the summer crop of 1886, and which had been spoilt by rain during the harvest.

Hay-making began nearly everywhere later than usual, as the latter part of May and first half of June were rainy. The earliest records in May or first days of June were in the south sandy lands. In most of the other provinces they began to mow from the 10th to the 20th of June. On account of the rain in some districts of different provinces the hay was completely abandoned in the fields as rotten.

Spring crops were not reaped before the 15th to the 20th of August. In some southern provinces harvest began between the 15th and 20th of July for spring wheat, oats, and barley. In the province of Penza millet was reaped as late as the 25th of August. Potatoes and beet-root were reaped in Kieff, Piazan, Penza, Simbiria, and Saratoff during the first part of September; in the provinces of Koursk and Toula on the 20th of August, and in the province of Kherson potatoes were dug in the first days of August. Flax was gathered from the 20th of July to the 1st of August.

In the arable provinces harvest set in as follows: For buckwheat, first days of August; for potatoes, first of September; for flax, last days of August. Generally speaking, the potato crop was badly spoiled, and a great portion (it is said one-third) was abandoned on account of the moisture.

Below will be found a table of temperature, with its variations, and the amount of rain-fall during 1887 for each observatory in European Russia:

Observatories.	Average monthly temperature at 7 a. m. in degrees Celsius.				Falling of temperature in degrees Celsius.				Rain-fall in millimeters.			
	Sept.	Oct.	Nov.	Dec.	Sept.	Oct.	Nov.	Dec.	Sept.	Oct.	Nov.	Dec.
Reval	8.3	4.2	−0.6	−3.5	−0.3	1.0	1.2	0.6	76	42	19	33
Riga	7.9	3.2	−0.7	−4.9	−0.4	0.0	0.6	−0.2	99	42	54	27
Warsaw	9.1	3.5	0.4	−7.1	0.1	0.5	2.2	−2.0	73	51	3	23
Vilna	7.9	3.4	0.4	−5.9	−0.5	0.4	2.3	0.2	127	26	27	11
Pinsk	8.3	3.4	−0.4	−7.1	0.2	0.6	1.6	−1.1	41	42	25	7
Kieff	8.5	3.8	0.7	−6.4	−0.2	0.9	1.9	−0.4	95	55	53	69
Charkhoff	9.2	4.9	1.1	−4.8	1.1	1.1	2.1	2.8	101	55	35	113
Odessa	13.5	8.8	4.7	−3.2	1.3	1.7	3.0	0.0	114	49	20	65
Sevastopol	16.3	11.6	7.3	1.8	2.2	2.1	1.9	0.0	101	25	55	70
Kertch	16.3	10.9	6.4	2.0	1.7	1.9	2.4	2.1	40	42	15	37
Piatagorsk	10.9	7.6	1.7	−1.9	0.7	2.8	1.9	2.1	60	75	2	3
Kozloff	6.6	2.3	−3.7	−7.1	−0.2	1.8	1.5	3.5	38	44	62	96
Brianak	7.1	2.2	−1.7	−7.8	−0.1	1.1	2.8	1.2	112	44	72	118
Moscow	6.2	1.9	−3.1	−9.4	0.1	1.6	2.3	0.8	43	26	37	67
Velika-Louki	6.6	1.6	−1.8	−7.8	0.2	0.2	1.6	−0.4	107	37	22	47
Arkangel	2.3	−0.5	−10.2	−19.2	−2.0	1.3	−1.5	−6.2	58	48	33	29
Totma	3.8	−0.4	−11.1	−15,1	−0.4	1.6	−2.9	−1.7	22	47	16	49
Kazan	6.3	0.5	−7.5	−9.2	0.6	1.1	0.3	4.5	36	45	31	40
Ecatherinburg	3.6	−1.6	−7.6	−11.0	0.6	1.4	3.6	6.1	74	43	22	22

CROPS OF 1887.

The crops of 1887 must be noted as far above the average. The principal cereals, such as winter and spring wheat, rye, and barley, were far above, while buckwheat and spelt-wheat (German wheat) were only slightly above. Rye, winter wheat, oats, and barley have not for five years given such fine crops as in 1887. Spring wheat and millet also yielded above the average of the last five years, with the exception of spring wheat, which was larger in 1884, and that of millet, greater in 1887.

If we compare the product of the principal cereals and potatoes in 1887 with the average of the last five years (taking 100 as the average product of five years), we find the percentage of the year 1887 to be as follows: Barley, 128; winter wheat, 142; spring wheat, 114; oats, 117; rye, 111; peas, 110; millet, 108; buckwheat, 93; spelt-wheat (German wheat), 85; maize, 76; winter cereals in general, 115; spring cereals in general, 114; potatoes, 113.

Although the year 1887 was not as abundant in moisture as the preceding year (1886), still the rain-falls ending May and the first part of June were sufficient, and the crops prospered. The weather during harvest was also very fine, the dry weather at the end of the summer injuring only the buckwheat and millet crops, which were worse than in 1886.

The most abundant crops, both of winter and spring cereals, were obtained in the southwest of Russia. Such crops in the district, not only of cereals but of second-rate food products, had not been obtained for a number of years. The crops on the lands situated in the valleys of the Volga were also exceptional.

The unsatisfactory crops of both winter and spring cereals were marked in three districts only, of which two were insignificant. The most unsatisfactory crops were produced in the Volga district, including the Ural district (provinces of Oufimsk and Orenburg), extending through a great portion of the provinces of Samara and Kazan and some parts of the province of Perm. In these provinces most of the crops suffered from drought, and some on account of the bad seed employed for the 1887 crops. The second district, in which the product was worse than that of the first, includes the whole province of Tauride; and lastly, the third district includes some stray localities in the provinces of Toula and Riazan.

WINTER CEREALS.

Rye.—The rye crop in 1887 was much above the average of the last five years, and most plentiful. Below is the out-turn of fifty provinces of Russia in Europe (excepting the Kingdom of Poland), where the rye crops proved of an average in some parts and above the average in others. The crop was as follows:

Crops.	Number of provinces in—			
	1884.	1885.	1886.	1887.
Very good (125 per cent. or more)	1	1	3	6
Good (105 to 125 per cent.)	12	11	15	20
Average (95 to 105 per cent.)	16	19	15	16
Middling (75 to 95 per cent.)	13	14	7	5
Bad (50 to 75 per cent.)	8	4	6	2
Very bad (less that 50 per cent.)		1	4	1

The finest rye crops produced in the black soil district are those which were obtained in the provinces of Kieff, Charkoff, and Koursk, and in those of the arable soil district the provinces of St. Petersburg, Eastland, and Tver. Middling crops were obtained in the Tauride province, and bad crops in the provinces of Oufimsk and Orenburg.

Comparing the rye crops of 1887, according to the agricultural department, with the average yield of the last five years in percentage the results are—

	Per cent.
In all black soil provinces	112
In all arable soil provinces	110
In all the provinces of Russia in Europe	111

Winter wheat.—Winter wheat grew still better than rye. In general its total crop exceeds the average by nearly one and a half times, and in all the districts devoted to its cultivation the crop is considered an extraordinary success. In some places in the provinces of Charkoff, Poltava, and Kieff it yielded 7,200 pounds, and even 10,800 pounds, per deciatine, or 2.69 acres.

The crop of winter wheat in 1887, compared with the average crops of the last five years, is—

	Per cent.
In all black soil provinces	143
In all arable soil provinces	118
In all the provinces of Russia in Europe	142

SPRING CEREALS.

Spring cereals, generally speaking, also produced above the average.

Spring wheat.—Spring wheat gave in 1887 a produce slightly above the average. Compared with the average of the last five years it gives as follows:

	Per cent.
In all black soil provinces	119
In all arable soil provinces	106
In all the fifty provinces of Russia in Europe	114

Oats.—Oats in 1887 gave a crop much above the average and the best during the past five years. Of the fifty provinces of Russia in Europe (excepting the Kingdom of Poland, where the crop was also above the average,) it shows the following:

Crops.	No. of provinces in—		
	1885.	1886.	1887.
Very good (over 125 per cent.)		2	3
Good (105 to 125 per cent.)	1	16	25
Average (95 to 105 per cent.)	6	17	14
Middling (75 to 95 per cent.)	13	10	5
Poor (50 to 75 per cent.)	17	3	2
Bad (under 50 per cent.)	13	2	1

The best crops of oats were obtained in the provinces of St. Petersburg, Lifland, and Charkoff, and the province of Tauride gave the worst crop. Besides the province of Tauride, unsatisfactory crops yielded principally in a certain portion of southeastern Russia, viz, the provinces of Orenburg, Oufa, Samara, and certain localities of Kazan and Saratoff. With the exception of these provinces, the remainder of Russia in Europe gave a crop above the average, and in some places very good. Thus, in theprovinces of Penza, Tamboff, Oriol, Koursk, Voronej, Charkoff, Ecatherinoslaw, and the Don district the crop of oats was very good.

Compared with the average of the last five years the oat crop for 1887 stands as follows:

	Per cent.
In all the black soil provinces	117
In all the arable soil provinces	118
In all the fifty provinces of Russia in Europe	117

Barley.—The barley crop for 1887 stood greatly above the average. With the exception of the provinces of Tauride, Vilna, and Kovno, where the crops were only middling, the remainder of Russia in Europe and the

Kingdom of Poland yielded crops above the average, and in the larger portion of the south sandy lands, southwestern, central, and northern black soil provinces, also in the industrial provinces and those of the northwest and north, the crops were excellent.

Compared with the average crops of the last five years the barley crop of 1887 stands thus:

	Per cent.
In all the black soil provinces	134
In all the arable soil provinces	118
In all the fifty provinces of Russia in Europe	128

Buckwheat. — The buckwheat crop was generally below the average. Good crops were received only in the northern provinces, viz: St. Petersburg, Pskoff, Novgorod, Tver, Yaroslaw, Kostroma, Viatka, and Perm. In the black soil provinces the crop was unsatisfactory. The best crops produced were those of some localities in the district of the Don and in those of the provinces of Kieff, Kherson, Ecatherinoslaw, Charkoff, Voronej, and Tamboff, and in the east, Samara, Simbiria, and Oufimsk. The average compared with that of the last five years is:

	Per cent.
In all black soil provinces	92
In all arable soil provinces	98
In all the provinces of Russia in Europe	93

Millet.—The general crop of millet was near the average. Good crops were reaped only in the provinces of Riazan, Tamboff, Penza, Simbiria, Kazan, and in some parts of the Don district.

The average crops, or those a little above the average, were reaped in the provinces of Orenburg, Oufimsk, Astrakhan, Voronej, Charkoff, Ecatherinoslaw, and in some localities in the north of Samara. In the remainder of the black soil provinces the millet crop was below the average, and in the province of Tauride and the southern part of Samara the crop was bad. The percentage for all the provinces of Russia in Europe, compared with the average millet crops for the last five years, is 108 per cent.

Peas.—The pea crop, generally speaking, was above the average. The unsatisfactory crops were reaped exclusively in the east of Russia in the provinces of Orenburg, Oufimsk, Samara, Kazan, Saratoff, and Penza, and also in the south of Russia in the provinces of Tauride and Bessarabia. In all the other parts of Russia pea crops were above the average, and excellent in those districts where the barley crops excelled.

Expressing the 1887 crop in percentage, compared with the average of the last five years, taking it at 100, one gets —

	Per cent.
In all black soil provinces	112
In all arable soil provinces	116
In all the provinces of Russia in Europe	110

Maize.— The maize crop was unsatisfactory (below the average). Most of it was produced in the province of Bessarabia. The best maize crops

were those received in the central black soil provinces. Compared with the average crops of the last five years it stands thus:

	Per cent.
In the south sandy lands	70
In the western provinces	98
In the central black soil provinces	115
In all the provinces of Russia in Europe	76

The spelt-wheat or German wheat.— The spelt-wheat crop was also below the average. Satisfactory crops were reaped in the provinces of Viatka, Nizhnee-Novgorod and Simbiria, but they were below the average in the provinces of Samara, Oufimsk, and Kazan. The average crop of spelt-wheat for Russia in Europe, compared with the average for the last five years, does not exceed 85 per cent.

Potatoes.—The potato crop was above the average. Unsatisfactory crops were gathered only in the provinces of Tauride and Kostroma, and also in several localities of the provinces of Yaroslaw, Perm, Viatka, and here and there in the province of Vilna. Everywhere else in Russia in Europe the potato crop exceeded the average, and in the provinces of the central black soil district the crops were very good.

Compared with the average for the last five years the crop of 1887 stands thus:

	Per cent.
In all black soil provinces	115
In all arable soil provinces	111
In all the fifty provinces of Russia in Europe	113

Linseed.— The linseed crop was, on the whole, very satisfactory. The crops in the Tauride province were bad, and not quite satisfactory in the province of Bessarabia, and here and there in the district of the Don and province of Ecatherinoslaw. In all the other provinces the linseed crop was above the average, and in some places very good; thus, some provinces yielded from 2,520 to 2,880 pounds of seed to 2.69 acres (a deciatine), and in other places from 3,600 to 6,480 pounds per deciatine.

Spring rye—With the exception of the crops reaped in the province of Tauride the crops of 1887 gave satisfaction. Especially good crops were obtained in the central black soil provinces, thus in some places of the province of Poltava the crop yielded 114 bushels to the deciatine.

Lentil seed.— The lentil crop was generally favorable, except in the province of Tauride, where it was altogether bad, and in the provinces of Tchernigoff and Kazan, where it was only middling.

Kidney beans.—The bean crop was generally good, excepting that in the province of Tauride and in some localities of Kherson, 48 bushels to the deciatine being the highest yield.

TOBACCO CROP.

The tobacco yield in 1887 was satisfactory, as seen in the following reports from the department of indirect imposts. The crop was better than that of 1886, 1885, and 1884.

The best crops were received in the provinces of Little Russia, and also in the central and northern black soil districts; the worst crops were found in the south sandy lands, especially in the provinces of Bessarabia and Tauride.

According to the same department the quantity of tobacco received in 1887, exceeded that of 1886 by 8,766 tons (486,996 poods), notwithstanding the fact that the acreage was reduced by 58 deciatines.

The following statement shows the number and acreage of plantations and their yield of tobacco in 1887, compared with 1886, for the Empire:

Year.	Number of plantations.	Acreage.	Yield.
			*Tons.**
1887	734,025	158,871	86,016
1886	582,361	159,027	77,250

* 1 ton = 2,000 pounds.

BEET ROOT.

The sugar beet root crop, according to the department of indirect imposts, was satisfactory, although in many places the crop was smaller than in 1886, yet, with some small exceptions (provinces of Oriol, Toula, and Tamboff), the product was of a better quality and sweeter than in 1886. Comparing the crop of 1887 with that of 1886, as is seen in the table below, the product was reduced in 1887 by 695,822 tons. This decrease is not caused by a small yield of beet root, but on account of the decrease in acreage planted, viz, 40,000 deciatines, or 107,600 acres. In general, the decrease in the acreage of beet root and its yield in Russia for the last three years are as follows:

Year.	Total acreage.	Total yield of beet root in tons.	Yield of beet root in tons per acre.
1885	800,963	5,874,553	6.5
1886	734,590	5,202,870	6.2
1887	627,891	4,509,226	5.9

Quality of cereals, showing the weight of grain in English pounds to the bushel in 1887.

Provinces in groups.	Rye.	Winter wheat.	Spring wheat.	Oats.
	Lbs.	*Lbs.*	*Lbs.*	*Lbs.*
South sandy, average of 6 provinces	53	47	58	34
Central black soil, 3 provinces	54	59	59	35
Southwest, 3 provinces	54	59	58	36
North black soil, 7 provinces	50	57	53	35
East and southeast, 6 provinces	52	57	52	32
Industrial, 6 provinces	52	58	50	34
Western, 6 provinces, and Poland	45	57	61	33
Central Volga, 4 provinces	50	57	54	33
Northwestern, 3 provinces	52	56	55	36
Baltic, 3 provinces	54	59	55	36
Northern, 3 provinces	49	.....	54	27

INSECT PESTS.

Agricultural pests or enemies showed themselves in many parts of Russia, but in smaller quantity than in 1886. For instance, in the south of Russia the *Pœchytilus migratorius* was present; the *Caloptenus italicus* prevailed in the sandy provinces. Reports show that the *Limax* caused great loss in the provinces of Yaroslaw, Moscow, and other districts. The mole and marmot did their work in the provinces of Samara and Yenisee. The *Gryllotalpa vulgaris* injured the potato crop in the province of Volinia and cereals in the province of Lublin. *Thrips* also showed themselves among the rye and wheat in the provinces of Yaroslaw, Samara, and near Moscow. The *Melolontha vulgaris* injured gardens in the provinces of Volinia, Tchernigoff, and Moscow; also oats in the province of Smolensk and beet root in Kieff. The *Anisoplia* was scarcely noticed this year, and the *Anisoplia austriaca* was not spoken of. The *Lethrus cephalotes* attacked beet root in the province of Kieff, buckwheat and sunflower seed in some parts of the province of Voronej; also, maize in the province of Kherson.

During the last years complaints have been made on account of the *Elateridæ*, a species of *Agriotes*, and *Athons*, or wire-worm. Even the Central Asian farmers are beginning to complain of them. In the province of Bessarabia Professor Lindeman followed the work of destruction caused by the latter worms, and especially the tobacco worm, *Opatrum intermedium* (Fisch), and the maize worm, *Pedinus femoralis* (Fisch). The *Bruclus* and *Bruchus pisi* found in peas showed themselves in the province of Poltava. The *Curculionidæ* and *Sitones* injured the pea and clover seed at the farm (model) belonging to the Petroff Academy where the *Arion* was also observed to injure clover seed.

In the province of Voronej cucumbers, melons, watermelons, and anis were destroyed by the *Tanymecus palliatus* and *Phylbobius maculicornis*, but certainly the greatest injury was made in the beet-root plantations, and due to the *Cleonus punctiventris*, in the provinces of Kherson, Koursk, Poltava, Voronej, and still greater in the provinces of Charkoff and Kieff. In this beet root producing district the beet root also suffered from the *Cassida nebulosa* in the provinces of Koursk, Toula, Charkoff, and Poltava. The *Halticidæ* was also noticed in some parts of the provinces of Podolia and Poltava.

The *Haltica vittula* injured cereals. The *Lema* was complained of as having attacked barley and oats in the provinces of Charkoff, Ecatherinoslaw, and the district of Kouban. With regard to flies, the most destructive were the winter fly (*Agrotis segetum*), the spring fly (*Hydræcia nectitaus*), and harvest fly (*Hadena basilinea*). The rye-moth (*Ochsenheimeria taurella*) was seen in the provinces of Toula, Riazan, and Kazan. The *Chlorops tæniopus*, or Swedish fly, as it is called, injured the crops in the province of Poltava, Kieff, Voronej, Toula, Moscow, Tver, and Lifland. The cabbage fly (*Anthomyia brassicæ*) showed itself in the province of Koursk. *Secale cornutum* was principally found in the northern district of Russia. *Ustilago carbo* was

noticed in wheat, oats, and barley in the provinces of Volinia, Baltic, Novgorod, Viatka, Moscow, Riazan, Koursk, and Tauride.

In some parts of the province of Koursk the wheat crop suffered from *Tilletia caries*.

GRAPE CULTURE.

Province of Bessarabia.—The condition of vines in the province of Bessarabia during spring was very satisfactory, especially in the localities where the rain-fall was seasonable, as was the case in the Kichinev and Yaskom districts. In some other localities they suffered, owing to drought which prevailed while the vines were in bloom. Besides this, in some vineyards hail-storms during the second part of May caused great injury. The prevailing diseases were caused by the *Phytoptus vitis* and the *Sphaceloma ampelinum*, doing much injury in many vineyards. With the beginning of summer hot weather set in, which, considering the absence of all rain, did much to reduce the wine crop. The crop in the district of Orgmerisk was worse than expected, in some places twice as bad as that of 1886.

The total yield was about the average. The quality of the wine turned out to be good. In the Akkerman district, on account of the dryness of the summer, the quality of the crop was good, but the quantity was an average. However, according to the reports from the Russian Imperial Agricultural Society, the yield of grapes in this district may be called above the average (about 2,676 pounds per acre). Wine was sold at the town of Akkerman at 10 cents per gallon and grapes at 24 cents per 36 pounds.

The phylloxera in 1887 was stopped in the village of Teleschoff and in several other villages, where about 2,150 vines were burnt and the land disinfected. Besides the above-named diseases the vines suffered in Bessarabia from mildew and *antracnoze*.

The acreage of vineyards in the province of Bessarabia is over 147,950 acres, divided as follows:

	Acres.
Kichinieff	42,910
Bender	21,520
Yaskom	4,743
Khotinsk	269
Orgencosk	10,760
Sorok	1,530
Akkerman	43,040
Izmaël	25,555
Total	150,327

According to statistics the yield obtained from an acre of land in the district of Akkerman was from 650 to 1,625 gallons of pretty strong wine. It would perhaps be unnecessary to give the detailed production of each district, but the yield of the different provinces may be found interesting. The neighboring provinces, namely, Kherson and Ecatherinoslaw, gave a fair crop, differing in reports, some localities being an average and others very good. The surface of land devoted to the culture of grapes in these provinces is not over 9,630 acres.

The grape crop in the district of the Don was expected to be good. Variations in the weather and temperature were not felt. The price of grapes at Novotcherkass in the beginning of the grape season was rather high. Grapes were sold at from 44 to 46 cents for 36 pounds (a pood). Later on the price fell to 1 cent and 1¼ cents per pound.

The Crimea.—From the very beginning of summer the aspect of the grape crop was very unsatisfactory. There was great drought and wind during the blooming period. At Alouchta water had to be brought 1½ and 2 miles. The crop in 1887 was very small but the quality very good. The grapes were gathered between the 21st of September and the 3d of October, and work had to be stopped on account of heavy rain-fall. During the month of September (old style) alone there were no less than fifteen days of rain. The average yield of grapes was 2.43 gallons to 36 pounds. In 1886 36 pounds of grapes yielded 2.86 gallons. The average crop of grapes in 1887 was 228½ gallons per 2.69 acres, much less than the usual yield of the southern coast, which generally gives from 151 to 181 gallons per acre. In 1886 the crop was twice as large, and in some places four times as great, as that of 1887. Manure is not employed on the southern coast, owing to the difficulty in obtaining it in sufficient quantities. The average price of wine for the southern coast was 70 cents a gallon, and grapes sold at $1.48 per pood (36 pounds). The average price of wine at Alouchta was 38 cents per gallon.

The Caucasus.—The grape and wine yield of the northern and transcaucasus was, in general, as satisfactory in quantity as in quality. The crops in the province of Tiflis was unusually bad. Throughout this province, with the exception of the district of Signaksk, the crop was below the average and the wine received of very poor quality. Notwithstanding this the price was high on account of the small quantity of wine obtained. Khakhetie district (wine known under the name of Khaketinsky) was under very variable temperature. Cold weather prevailed during the whole of the summer, and it only became warm when the grapes were being gathered. The grapes suffered from *Oidium tuckeri*. In many places nothing was done to prevent this, although flower of sulphur and chalk dust could have been obtained very cheaply. Hail also destroyed the crops in many localities. The disease from which the vines of this district mostly suffered was the mildew (*Peronospora viticola*). This disease, which has been doing such injury to the vines in France, has reached the east in due time. The vines have already suffered of it in Tiflis, and now it has arrived in Khakhetie, some localities losing two-thirds and others the total crop through mildew. In this district common wine was sold at 28 to 35 cents a gallon, and the higher quality from 40 to 60 cents a gallon. The whole crop of Khaketinsky wine was sold by the 1st of November (13th of November new style).

In the province of Koutais the wine crop was certainly from 30 to 35 per cent. worse than that of the average for the last five years.

The province of Elizavetpolsk gives a yearly yield of from 1,622,223 to 2,275,000 gallons of wine. The crop is calculated at from 1,300 to 1,622

gallons per 2.69 acres. Ten years ago this wine cost from 7 to 12 cents a gallon, while the prices in 1887 were: For common wine, 12 cents a gallon; middling wine, 18½ cents a gallon; high quality, 32 cents a gallon.

The province of Bakinsk produced about 1,300,000 gallons of wine. The price of wine was similar to that of Elizavetpolsk.

In the Black Sea district the crop was smaller than that of last year, but the quality of the wine was better.

Turkestan district.—This district is very rich in vines, although the vineyards do not cover more than 10,760 acres. The vines are covered in winter with straw and a layer of earth on the top of them, as the thermometer sometimes falls to 10° (Réaumur) below zero. No vine disease is known. The grapes are mostly used in this district for the manufacture of alcohol. Very little wine is made, and this is made at Tashkent and Samarcandt, the necessary supply being 3,857 tons of grapes. The remainder of the crop is dried and mostly sent to Siberia.

PRICE OF FIELD PRODUCTS.

The tables below show the average yearly prices of the principal cereals in the markets of Russia compared with those of the last four years:

Wheat prices.

Markets.	Name and quality.	Unit of quantity.	1887.	1886.	1885.	1884.	1883.
St. Petersburg	Saxony	Per bushel	$0.79	$0.76	$0.72	$0.76	$0.90
	Samara	do	.64	.71	.68	.73	.88
Rybinsk	Kouban, first quality	do	.92	.91	.88	.87	.89
	Kouban, second quality	do	.76	.77	.72	.70	.80
	Saxony	do	.72	.68	.63	.67	.78
	Samara	do	.60	.60	.57	.64	.75
Odessa	Winter	Per 36 pounds	.44	.44	.39	.44	.54
	Sandomir	do	.46	.43	.40	.46	.54
	Girk	do	.44	.43	.38	.45	.52
Warsaw	Sorted	do	.47	.43	.43	.52	.57
	Middling	do	.45	.39	.40	.48	.52
	Ordinary	do	.42	.35	.34	.42	.44

It is seen from this table that, in general, the prices for 1887 were lower than those of the years 1886–'83.

Price of oats.

Markets.	Name and quality.	Unit of quantity	1887.	1886.	1885.	1884.	1883.
St. Petersburg	Heavy	Per bushel	$0.42	$0.46	$0.51	$0.58	$0.61
	Ordinary	do	.38	.43	.49	.56	.58
Rybinsk	With one bag	do	.32	.36	.41	.50	.52
	With double bag	do	.34	.38	.43	.52	.54
Rostoff-on-the-Don		do	.32	.41	.41	.49	.....
Reval		do	.42	.45	.50	.....	.....
Riga		Per pood (36 lbs.)	.28	.31	.34	.39	.39
Libau		do	.28	.31	.34	.39	.40
Odessa		do	.25	.28	.29	.34	.35
Warsaw	Assorted	do	.30	.31	.32	.39	.40
	Average	do	.29	.30	.31	.38	.....
	Ordinary	do	.28	.28	.29	.35	.37

Thus the average prices of 1887 showed from 10 to 12 per cent. below the average prices of the preceding years, and compared with 1884–'83 a difference of from 25 to 30 per cent. In general the market prices of oats have fallen rapidly.

Barley prices.

Markets.	Name and quality.	Unit of quantity.	1887.	1886.	1885.	1884.	1883.
St. Petersburg		Per bushel	$0.44	$0.59	$0.60	$0.58	$0.55
Rostoff-on-the-Don		do	.34	.38	.35	.43	.....
Odessa		Per 36 pounds	.24	.25	.25	.30	.32
Saratoff		do	.20	.30	.31	.25	.27
Warsaw	Sorted	do	.30	.33	.33	.38	.36
	Ordinary	do	.29	.32	.32	.38	.36
Libau	Last year's (dry)	do	.30	.32	.35	.39	.36
	This year's (damp)	do	.26	.27	.29	.....	.32
Riga	Dry	do	.30	.34	.36	.39	.....

As seen by this table, the fall in the price of barley was nearly as great as that of oats. However, in the southern and western markets the price was firm, on account of the good quality. The price of barley employed by breweries was kept firm.

Peas. — The price of peas this year was about the same as that of 1884, but much cheaper than in 1886 and 1885. For instance, in Rybinsk peas were sold as follows:

Quality.	1887.	1886.	1885.	1884.	1883.
Large peas, per bushel	$1.04	$1.11	$1.07	$0.92	$1.03
Middling peas, per bushel	.75	.98	.83	.67	.61
Small peas, per bushel	.52	.55	.66	.53	.64

Buckwheat. — Although buckwheat was in great demand everywhere, still the price was lower than in 1886. Thus, in Kazan 36 pounds of buckwheat were sold at from 28 to 22 cents; in Warsaw, from 32 to 31 cents; and in Libau, from 36 to 31 cents per pood.

Maize. — The price for maize was raised in the southwestern district on account of the bad crop. Thus, in 1886 one paid 26 cents per 36 pounds, and in 1887 it cost 27 cents. In Rostoff-on-the-Don, where the crop was abundant, it sold at from 37 to 36 cents per bushel.

The prices of all flours greatly decreased, with the exception of wheat flour, which in some localities was dearer.

The demand for oil-seed, flax, and hemp was very great. Notwithstanding this the prices of these products, compared with those of last year, fell more or less.

The table following shows the variation in prices from 1881 to 1887 in average results for all the provinces of Russia in Europe, arranged according to soil. It will be seen that the prices of all field products are gradually declining and leaving a very small profit to the farmer, even in the event of very good crops being harvested. In some places the prices were below the

average, owing to the proprietors placing their product on the market while the market was still filled with the product coming from the peasant. In autumn of the year 1887 (end of August and beginning of September) there was a heavy fall in the price of cereals, such as had not been experienced for many years.

Table showing the variations in price of the principal cereals during the past 8 years (per bushel).

Cereals and year.	Black soil.	Arable soil.	Average for Russia.
Rye.			
1881–'83	$0.45	$0.59	$0.52
1884	.32	.52	.42
1885	.29	.46	.38
1886	.29	.39	.34
1887	.23	.32	.33
Winter wheat.			
1881–'83	.70	.79	.75
1884	.47	.65	.56
1885	.48	.57	.67
1886	.60	.60	.60
1887	.51	.52	.52
Spring wheat.			
1881–'83	.63	.75	.69
1884	.42	.56	.49
1885	.43	.52	.47
1886	.52	.51	.52
1887	.47	.45	.46
Oats.			
1881–'83	.19	.27	.23
1884	.18	.27	.23
1885	.21	.27	.24
1886	.16	.21	.18
1887	.13	.16	.15
Barley.			
1881–'83	.30	.43	.37
1884	.26	.41	.34
1885	.27	.40	.34
1886	.23	.35	.26
1887	.20	.27	.23
Potatoes.			
1881–'83	.15	.15	.15
1884	.10	.14	.12
1885	.12	.14	.13
1886	.11	.11	.11
1887	.11	.11	.11

Average local prices of hay in 1887 (per 36 pounds).

Provinces.	Price.	Provinces.	Price.
Black soil.		*Arable soil.*	
South steppes	$0.10	Northern	$0.07
Southwestern	.07	Northwestern	.08
Central	.07	Central and transvolga	.05
Northern	.05	Industrial	.07
Eastern and southeastern	.06	Western	.10
		Baltic	.12

MISCELLANEOUS INFORMATION CONCERNING CEREAL EXPORTS.

The export of millet, barley, and various flours did not even attain the average of the last five years, while for all other cereals the export greatly increased. The increase of 1887 over 1886 was as follows:

Articles.	Quantity.	Per cent.	Articles.	Quantity.	Per cent.
	Poods.			*Poods.*	
Wheat	4,396,000	50.7	Maize	1,006,000	51.1
Rye	1,392,000	19.3	Various grains	597,000	44.2
Barley	1,728,000	41.9	Cereals in general	13,513,000	46.4
Oats	4,394,000	76.1			

The value of the exports of cereals in 1887 amounted to $123,032,000, against $86,762,800 in 1886, viz, an increase in 1887 of $36,269,200, or 41.8 per cent.

Ports of export.—Of the general quantity of cereals exported in 1887, 87 per cent. were of wheat, rye, barley, and oats. Below I show the points from which these cereals were exported:

Ports.	Wheat.	Rye.	Barley.	Oats.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*
White Sea	.....	324,000	.....	912,000
Baltic	5,264,000	25,470,000	3,216,000	50,904,000
Russian-Prussian	6,864,000	4,914,000	1,284,000	2,544,000
Russian-Austrian	1,086,000	1,554,000	432,000	972,000
Russian-Roumanian	12,000	150,000	174,000	.....
Black Sea	36,702,000	13,488,000	20,082,000	5,292,000
Sea of Azoff	28,464,000	5,802,000	9,756,000	390,000
Total	78,392,000	51,702,000	34,944,000	61,014,000

Percentage of exports.

Ports.	Wheat.	Rye.	Barley.	Oats.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
White Sea	.....	0.6	.....	1.5
Baltic	6.7	49.3	9.7	83.4
Russian-Prussian	8.8	9.5	3.6	4.2
Russian-Austrian	1.4	3	1.2	1.6
Russian-Roumanian	.....	0.3	0.5	.....
Black Sea	46.8	26.1	57.2	8.7
Sea of Azoff	36.2	11.2	27.8	0.6

Thus it is seen that 83.1 per cent. of wheat and 35 per cent. of the barley shipments were made from the southern ports, whilst rye and oats went principally through the Baltic ports.

Cereal exports by countries.—The customs department gives the following statement as to the direction the principal cereals took. These exports are calculated as follows, per bushel: Wheat, 60 pounds; rye, 58 pounds; barley, 47 pounds; oats, 40 pounds.

WHEAT.

Whither exported.	Quantity.	Whither exported.	Quantity.
	Bushels.		*Bushels.*
United Kingdom	29,000,000	Austria-Hungary	3,043,850
Italy	13,540,000	Spain	2,239,800
France,	9,250,000	Turkey	1,839,000
Germany	7,550,000	Belgium	1,033,600
Holland	6,474,000	Other countries	97,550
Greece	4,282,200	Total	78,392,000

RYE.

Germany	14,180,276	Denmark	2,657,173
Holland	10,443,103	Austria-Hungary	1,458,619
United Kingdom	9,204,207	Other countries	5,919,933
Norway and Sweden	7,838,689	Total	51,702,000

BARLEY.

United Kingdom	20,031,200	France	846,600
Holland	6,042,200	Other countries	1,787,000
Germany	3,687,000	Total	34,944,000
Belgium	2,550,000		

OATS.

United Kingdom	30,977,000	France	6,457,500
Holland	7,552,600	Other countries	2,847,200
Germany	6,685,700	Total	61,014,000
Belgium	6,494,000		

Maize, mostly exported to England; peas, exported to Germany (at 64 pounds per bushel), 1,355,625 bushels; flour, exported to Turkey (at 56 pounds per bushel), 928,886 bushels.

Monthly exports.—The monthly exports of cereals in 1887 is shown in the table following. As seen in this table, the most considerable exports were made in the months of May, September, October, and November, and that during these last three months 38.5 per cent. of the yearly exports were shipped. Generally speaking, one and a half times more exports were made during the last six months of 1887 than during the spring and summer months. If we consider the monthly movement of prices of the principal cereals, we find that it often occurs that the lower the prices the greater the exports. We must therefore conclude that Russian exporters have not yet learned how to hold their goods for a favorable offer. This is principally due to the want of elevators, capital, and properly diffused information, from which all grain dealers suffer. Although the absence of speculation has its good side, it sometimes subjects dealers to great losses, owing to their ignorance of other markets, the crops of other countries, etc., all of which they would study if Russia had large speculative exchanges and regular sources of knowledge of the outside world.

Percentage of monthly exports of cereals in 1887.

Month.	Per cent.	Month.	Per cent.
January	4.8	July	6.5
February	5.9	August	8.2
March	5.5	September	11.5
April	6.8	October	14 7
May	8.6	November	12.3
June	7	December	8.2

Table showing the average prices of agricultural products in the principal Russian markets during 1887.

Products.	St. Petersburg.	Moscow.	Rybinsk.	Saratoff.	Tamboff.	Yeletz.
Wheat, per bushel (60 pounds)	$0.68	$0.75	$0.75	$0.63	$0.73	$0.75
Wheat flour, per sack of 180 pounds		3.94	3.23	2.49	3.36	3.31
Rye, per bushel	.41	.36	.33	.24	.25	.25
Rye flour, per sack of 324 pounds	2.36	2.49	1.85	1.40	1.51	*2.33
Oats, per bushel (36 pounds)	.25	.18	.17	.12	.10	.15
Barley, per bushel (48 pounds)	.44	.42	.26	.27		
Peas, per bushel (60 pounds)		.75	.77	.53		.40
Buckwheat, per bushel (42 pounds)					.30	.32
Oatmeal, per 36 pounds		.16	.13	.09		.10
Linseed, per bushel (56 pounds)	.74	.87	.69		.45	
Sunflower-seed, per 36 pounds		.54		.38	.32	

Products.	Odessa.	Warsaw.	Riga.	Libau.	Reval.
Wheat, per bushel (60 pounds)	$0.75	$0.74	$0.80		
Wheat flour, per sack of 180 pounds	3.80	4.04			
Rye, per bushel	.38	.45	.43	$0.43	
Rye flour, per sack of 324 pounds		2.12			
Oats, per bushel (36 pounds)	.20	.24			
Barley, per bushel (48 pounds)	.32	.40			
Peas, per bushel (60 pounds)		.49		.52	$0.70
Buckwheat, per bushel (42 pounds)		.36		.37	
Oatmeal, per 36 pounds					
Linseed, per bushel (56 pounds)	.62		.57	.57	.81

*Sacking.

FLAX CULTURE.

The market being encumbered with cereals and the demand having greatly decreased, not only have farmers been forced to find means to produce wheat cheaper, but their attention has been drawn to the culture of flax.

During the first half of the present century the cultivation of flax covered a large acreage, which has gradually increased. This is visible not only from the increase of the home product, but also from the exports, which amounted to 34,769 tons in 1824–'26, and increased to 68,158 tons in 1848–'50. According to the central statistical bureau, Russia in 1881 had 4,762,300 acres devoted to the culture of flax, which is about 2.16 per cent. of the total acreage under cultivation.

From the following we see that flax is grown throughout Russia in Europe, and that 41.4 per cent. of the total surface under flax lies in the twenty-five black soil provinces and 58.6 per cent. in the arable soil provinces: Total acreage under flax in the twenty-five black soil provinces, 1,526,601 acres; in the twenty-five arable provinces, 2,164,045 acres; total, 3,690,646 acres. Percentage of flax sown in the twenty-five black soil provinces, by peasants, 0.9 per cent.; by proprietors, 1.8 per cent.; in the twenty-five arable soil provinces, by peasants, 4.6 per cent.; by proprietors, 3.2 per cent.

It must be said that since 1884 the high prices offered for cereals had reduced the culture of flax, but since 1886 it has gradually returned. The average crop of flax per acre and average price per pood for the five years 1882–'86 in the twenty-five arable soil provinces were as follows: Acreage, 2,164,045; average yield per acre, 231 pounds; average crop, 218,432 tons; average price per 36 pounds, $1.64.

Home-spun linen prepared by the peasants amounts to 116,700,000 yards. The first mills were introduced into Russia in the sixteenth century. In 1809 Russia possessed 202 mills and 18,727 looms, and manufactured 16,530,000 yards of linen. Little by little, prices of mill products having declined, the number of mills was reduced. Thus in 1830 Russia had 190 mills; in 1835, 171; and in 1863, 109. During the last years, however, we have observed a slight improvement both in the number of mills and value of the out-turn. The value of the total manufacture was $3,208,541.

Number of mills, value of products, and number of workmen, 1880–'84.

PROVINCES OF RUSSIA IN EUROPE.

Year.	Number of mills.	Value of products.	Number of workmen.
1880	158	$9,022,060	24,631
1881	153	9,495,200	33,688
1882	154	9,617,600	32,170
1883	160	10,852,000	35,991
1884	166	10,538,800	38,966
KINGDOM OF POLAND.			
1880	15	1,078,400	9,339
1881	14	910,400	7,298
1882	18	1,222,400	7,425
1883	21	1,536,000	8,402
1884	19	1,496,800	7,810

Prices vary widely owing to the numerous qualities produced. At St. Petersburg 10 poods (or 360 pounds) of flax were sold at—

1884	$6.80 to	$25.20
1885	6.80	25.60
1886	7.20	27.20
1887	10.80	25.60

The average price of flax per 10 poods, for the last five years, has been as follows:

1883	$16.56
1884	17.57
1885	19.20
1886	21.48
1887	19.92

It may be interesting also to show the exports of flax for the past four years, 1884–'87:

Year.	Quantity.	Value.
	Tons.	
1884	178,620	$23,491,216
1885	150,334	18,886,899
1886	114,275	15,443,839
1887	137,427	19,038,000

The largest export of flax since the year 1749 was made in 1881, and amounted to 208,554 tons, valued at $27,913,402.

Value of flax products exported, 1860–'85.

Years.	Yarn.	Sail cloth.	Flemish linen.	Raven's-duck.	Toweling.	Crash.	Table linen.
1860	$60	$102,000	$11,500	$43,100	.....	$206,500	$16,100
1865	9,400	40,800	21,500	47,700	$10,000	490,400	40,700
1870	766,200	117,800	1,100	17,700	.....	186,200	121,400
1875	98,600	45,000	20	11,600	600	109,300	36,200
1880	38,000	65,700	160	7,700	.....	245,500	102,800
1885	64,200	43,600	1,160	11,000	2,520	177,200	.....

In 1887 the exports of flax from the different points of Russia were as follows:

	Tons.
Riga	39,443
Werjbaloff	32,271
Reval	19,543
Graeva	10,816
St. Petersburg	7,795
Sosnovitz	4,628
Libau	2,282

The export of flaxseed was—

	Bushels.
1877–'81 (average)	407,083
1882–'86 (average)	290,310
1887	365,166

The table below gives the value in dollars of flaxseed, oil, and residue exported during the last ten years:

Year.	Seed.	Oil.	Residue.
1877	$9,088,825	$16,275	$527,816
1878	14,367,748	48,394	425,049
1879	16,430,636	14,120	599,140
1880	14,910,944	56,411	704,434
1881	12,910,978	3,279	728,804
1882	14,938,958	20,128	1,151,542
1883	11,972,164	.....	1,791,984
1884	8,599,378	.....	2,387,076
1885	3,466,120	13,163	1,979,973
1886	5,889,950	11,765	1,537,536
1887	10,748,400	2,800	1,659,600

The following table shows from what points of Russia and in what amounts flaxseed was imported:

Ports.	1884.	1885.	1886.	1887.
	Tons.	*Tons.*	*Tons.*	*Tons.*
White Sea	10,347	176	954	6,786
Baltic	112,561	66,229	99,023	223,668
Russian-Prussian	23,205	13,898	20,067	
Russian-Austrian	1,160	1,043	1,418	21,240
Russian-Roumanian	.....	.....	156	
Black Sea	35,649	6,193	27,810	
Finland	9	192	212	103,266
Asia	741	495	2,243	
Azoff	87,637	21,594	34,339	

By adding together the value of all flax products exported during the last few years we obtain an average yearly export of from $32,000,000 to $36,000,000.

Average yearly export of flax products from 1856 to 1880.

	Average value.
1856–'60	$11,600,000
1861–'65	13,600,000
1866–'70	23,200,000
1871–'75	31,200,000
1876–'80	36,800,000

Thus the value of flax product forms about one-sixth of the total Russian exports.

PRICE OF LIVE CATTLE AND MEAT.

After a period of years unfavorable for the export of cattle, 1886 brought a little improvement. It was still better in 1887, and, as will be seen, the price of cattle has risen considerably. Certainly it can not be said that the sale of cattle has been very good for 1887, inasmuch as the difficulties brought about by veterinary officials attached to the local police offices in order to restrain the epizooty, as well as the bad crops in some places, such as the Crimea and the transvolga provinces, obliged many proprietors to dispose of their cattle either for want of forage or on account of lack of money.

Horses and horned cattle.— In spring of 1887 the price of horses throughout all Russia, with few exceptions, was a little lower than in the spring of 1886. The price of horned cattle, as usual, fell in the autumn. Among the different kinds of horned cattle, working oxen in most of the black soil spots of the arable soil provinces, compared with last year, were higher in price; oxen for slaughter were dearer in the black soil provinces and cheaper, or about the same, in the arable soil provinces; cows were dearer in most parts both of the black and arable soil provinces.

Sheep.— The common sheep in autumn were somewhat cheaper than in 1886, while for the merinoes during 1887 (in the principal provinces devoted to the wool trade) the prices scarcely changed. Last year the prices had largely increased.

Hogs.— Compared with 1886 (generally speaking) the prices were somewhat higher, owing to the increase in the export of salt pork.

Average price of live cattle in Russia in Europe, 1882–'87.

Provinces.	Animals.	1882.	1883.	1884.	1885.	1886.	1887.
Spring:							
Black soil	Work horses	$22.40	$22.00	$20.00	$18.20	$15.60	$15.20
Arable soil	do	24.40	24.40	24.00	21.20	20.00	19.20
Autumn:							
Black soil	do	17.60	17.20	14.40	10.80	12.00	12.80
Arable soil	do	18.40	17.60	17.60	14.00	13.20	14.80
Spring:							
Black soil	Pair work oxen	49.20	43.60	41.60	36.40	30.00	32.00
Autumn:							
Black soil	do	41.20	34.00	32.00	23.60	24.80	28.40
Spring:							
Black soil	Oxen (slaughter)	26.00	22.40	22.80	20.40	16.40	17.60
Arable soil	do	20.80	19.60	20.00	18.00	17.20	14.40
Autumn:							
Black soil	do	21.60	18.80	18.40	14.00	14.00	15.60
Arable soil	do	16.40	16.40	16.00	12.80	12.40	12.40
Spring:							
Black soil	Cows (milch)	17.20	16.40	14.00	12.40	10.40	10.40
Arable soil	do	14.40	14.00	12.80	11.60	10.80	10.40
Autumn:							
Black soil	do	14.20	12.40	10.40	7.60	8.00	8.80
Arable soil	do	11.20	10.40	10.00	7.60	7.20	8.00
Spring:							
Black soil	Sheep (common)	1.78	1.60	1.50	1.40	1.20	1.22
Arable soil	do	1.14	1.14	1.14	1.40	1.32	1.30
Autumn:							
Black soil	do	1.46	1.40	1.22	1.00	1.04	1.10
Arable soil	do	1.30	1.26	1.32	1.06	.94	1.06
Spring:							
Black soil	Sheep (merino)	1.86	1.82	1.42	1.26	1.08	1.14
Autumn:							
Black soil	do	1.64	1.62	1.22	.88	.98	1.22
Spring:							
Black soil	Hogs (fattened)	9.60	8.80	8.80	6.80	6.40	6.40
Arable	do	9.20	9.60	9.60	8.00	7.20	7.60
Autumn:							
Black soil	do	8.80	8.40	7.20	5.60	6.00	6.40
Arable soil	do	9.20	8.80	9.20	7.20	6.40	7.20

Price of meat.—The price of all kinds of meat, compared with that of 1886, was about the same, still there was a tendency toward improvement. In the spring of 1887 the price of meat was a little higher than the autumn prices of same year. The table below shows the average price of meat during autumn, arranged according to groups of provinces.

Average price of meat in autumn of 1887 per pood.

Groups.	Meat (beef).	Mutton.	Pork.
Black soil.			
South Sandy	$0.96	$0.90	$1.20
Southwestern	.88	.66	1.12
Central	.90	.74	.96
Northern	.98	.82	1.10
Eastern and southeastern	.68	.64	.78
Average price for all the black soil provinces	.88	.74	1.04
Arable provinces.			
Industrial	1.10	1.02	1.52
Western	.86	.70	1.42
Central and transvolga	.76	.70	.90
Northwestern	1.08	1.10	1.44
Baltic	.94	1.22	1.66
Northern	.90	1.04	1.60
In all arable provinces	1.06	.96	1.50

The following table gives the price of cattle at St. Petersburg per head and per pood during 1887:

Kinds.	Prices per head.		Price per 36 pounds.	
	Ordinary.	Superior.	Ordinary.	Superior.
Oxen:				
Tcherkess	$14.86	$60.00	$1.40	$2.28
Russian	5.20	56.00	1.00	1.22
Livonian	8.00	52.00	1.28	1.92
Calves	.80	43.20	1.52	5.20
Hogs	2.00	28.00	1.52	2.68
Sheep	1.00	10.00	1.28	4.00

The average price of cattle and meat in Moscow for the year 1887 (average weight of an ox, 522 pounds) was as follows:

	Price.
Per head	$19.20
Per pood (36 pounds)	1.10
Cows per head	12.10
Fatty meat per pood	1.06
Second quality per pood	.70
Young cattle per pood	.52
Sheep per head	1.22
Pork per pood	1.36
Meat (first quality) for export per pood	1.28

AVERAGE PRICES OF TALLOW IN 1887 PER POOD.

St. Petersburg.—Yellow tallow for candles, $1.85; tallow for soap, $1.90.

Moscow.—Sheep grease, melted, $1.62; beef grease, $1.68.

Tamboff.—Grease in crude state, $1; grease, melted, $1.50.

PRICE OF LEATHER (HIDES) IN 1887.

Moscow.—Tcherkess ox, red hides, per pood, $2.14; Tcherkess ox, gray hides, per pood, $2.30; Tcherkess cows, per hide, $3.08; Russian cows' hides, per pood, $2.22; horse hides, dry, per hide, $1.64; foal hides, per hide, 24 cents.

Warsaw.—Hides of oxen from the sandy lands, $5.92 per hide; hides of oxen fed in the forests, $3.72 per hide; hides of Polish horses, $1.20 per hide; hides of Russian horses, $2 per hide.

The number of cattle received at the St. Petersburg slaughter-house in 1887 was: Large, 198,004, valued at $5,981,225; increase in 1887 compared with 1886, 7,689, valued at $85,206; small, 169,243, valued at $1,006,050; increase in 1887 over 1886, 4,597, valued at $15,790.

The export of horned cattle and pork gave a much better result than in 1886, while that of horses and sheep was somewhat reduced.

The number of live animals exported through the European frontiers was as follows:

Animals.	1885.		1886.		1887.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Number.		*Number.*		*Number.*	
Horses	33,496	$1,097,452	25,501	$1,113,961	20,600	$1,028,000
Oxen and cows	42,166	1,349,340	38,469	1,084,624	43,700	1,228,400
Goats and hogs	203,023	1,602,220	46,828	521,000	62,800	647,600
Sheep	362,186	819,725	345,055	848,264	252,000	506,400

The export of fresh meat across the frontier (European direction) decreased in 1887, while the export of salt and smoked meat increased, viz: Fresh meat in 1886, 875 tons, valued at $94,800; in 1887, 622 tons, valued at $68,400; salt and smoked meat, in 1886, 715 tons, valued at $86,400; in 1887, 868 tons, valued at $120,000.

EXPORT OF MEAT FROM ODESSA IN 1887.

Odessa, which exports the largest quantity of Russian meat, gives the following report: According to the Odessa slaughter-house, cattle market, and veterinary reports, it is seen that the total sale in 1887 exceeded that of 1886 and amounted to $2,980,000, out of which amount $1,773,600 remained in the country and $1,206,400 was exported. The provinces supplying these cattle were: Bessarabia, 25 per cent.; Kherson, 53 per cent.; Podolia, 12 per cent.; Tauride, 3 per cent.; Ecatherinburg, 5 per cent.; Kieff, 2 per cent.

Of the total amount exported Greece took 30 per cent., freight being $1.60 to $2 per head; Turkey, 25 per cent., freight $2 to $2.80; Egypt, 15 per cent., freight $6 to $6.80; Malta, 15 per cent., freight $1.60 to $2; Corfu, 5 per cent., freight $2 to $2.40; Italy, 7 per cent., freight $2.40 to $3.20; Cyprus, 1 per cent., freight $6 to $7.20. The remaining 2 per cent. were sent to Spain, France, England, Holland, China, and Japan.

On account of epizooty, exports of meat during 1887 were partly, and in some ports altogether, prohibited. It must be remarked that, although the epizooty existed in the south of Russia, foreign markets had full confidence in the supplies made by the Odessa slaughter-house, considering it a sufficient guaranty.

The report notices that sheep-breeding in the south of Russia is dropping off year by year. The reason may be owing to the fall in the price of wool, in consequence of the great amount of cotton now used. It would appear as though raising sheep for the foreign markets would be a good thing, but, unfortunately, the Russian farmers do not seem willing to undertake it.

PRICES OF FARM PRODUCTS.

According to reports, it is seen that in general dairy products found a ready sale, and the prices were much better than in 1886. The abundant crops and low exchange increased the export of cheese alone to twice the amount exported in 1886. The amount of Chester cheese sent to London was 78,00 poods, besides other kinds of cheese.

The following table gives the average prices per pood of butter throughout Russia, according to groups of provinces:

Provinces.	Russian melted butter.	Finland salted butter.	Cream butter.
Black soil.			
Southern sandy lands (five provinces)	$4.84	$3.89	.....
Southwestern (three provinces)	3.50	3.40	.....
Central black soil (three provinces)	3.50	3.50	$4.20
Northern black soil (seven provinces)	3.44	3.25	4.94
Eastern and southeastern (eight provinces)	3.34	3.40	4.00
Arable provinces.			
Industrial (six provinces)	3.80	3.67	5.60
Western (six provinces)	3.50	3.59	4.80
Central and transvolga (four provinces)	3.25	3.68	4.80
Northwestern (three provinces)	3.38	3.80	5.60
Baltic (three provinces)	3.80	4.14	5.23
Northern (three provinces)	3.34	3.22	5.20

PRICE OF FIELD LABOR.

According to the table below, it will be seen that in Russia in Europe the price of labor was a little higher in the harvest period of 1887 than in the hay-making period and autumn of 1886. The table gives the average price of field-hand labor in the Russian Empire for 1887 and for the three periods, viz, spring, summer, and winter.

Average price of field-hand labor in the Russian Empire for 1887.

Names of provinces.	Period.	Laborer with horse, feeding himself.	Laborer without horse.		Female laborers.	
			Feeding himself.	Food supplied.	Feeding themselves.	Food supplied.
BLACK SOIL.		*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Bessarabia	Spring	60	23	18	14	12.5
	Summer	.....	30	23	20	15
	Winter	.....	35	25	23	17.5
Kherson	Spring	60	20	15	15	10
	Summer	.....	23	20	15	11
	Winter	.....	50	45	30	27.5
Ecatherinoslaw	Spring	50	17.5	15	15	10
	Summer	.....	27.5	20	15	11
	Winter	83	50	45	30	27.5
Tauride	Spring	73	25	20	20	15
	Summer	.....	.....	27	20	15
	Winter	80	40	33	25	20
Don district	Spring	60	23	15	13	10
	Summer	.....	.....	25	.....	15
	Winter	80	.....	38	30	23
Central black soil.						
Voronej	Spring	43	15	13	10	7.5
	Summer	45	25	20	15	10
	Winter	60	30	25	18	14
Kharkoff	Spring	40	18	12.5	12.5	7.5
	Summer	50	25	17.5	16.5	11.5
	Winter	63	37.5	30	25	20
Poltava	Spring	50	15	10	10	7.5
	Summer	60	22.5	17.5	15	10
	Winter	62.5	32.5	27.5	20	17.5
Southwestern provinces.						
Kieff	Spring	45	12.5	10	10	8.5
	Summer	62.5	22.5	18.5	13.5	10
	Winter	62.5	27.5	20	18.5	12.5
Podolia	Spring	47.5	13.5	11.5	10	7.5
	Summer	50	20	15	15	10
	Winter	57.5	25	20	20	15
Volynia	Spring	50	17.5	11	10	7.5
	Summer	45	22.5	.....	12.5	.....
	Winter	50	25	22.5	17.5	14
North black soil.						
Tchernigoff	Spring	40	17.5	13.5	12.5	8.5
	Summer	57.5	22.5	21.5	15	11.5
	Winter	55	22.5	20	20	15
Orloff	Spring	37.5	15	12.5	10	7.5
	Summer	40	22.5	.....	12.5	.....
	Winter	50	25	17.5	15	12.5
Koursk	Spring	40	15	12.5	10	7.5
	Summer	50	25	20	15	12.5
	Winter	57.5	30	25	20	15
Toula	Spring	45	17.5	12.5	10	7.5
	Summer	47.5	25	20	13.5	.....
	Winter	52.5	25	20	15	10
Riazan	Spring	40	17.5	12.5	10	7.5
	Summer	50	28.5	20	13.5	10
	Winter	50	30	25	17.5	14
Tamboff	Spring	40	17.5	12.5	7.5	6
	Summer	47.5	25	18.5	15	.....
	Winter	45	22.5	17.5	15	10

Average price of field-hand labor in the Russian Empire for 1887—Continued.

Names of provinces.	Period.	Laborer with horse, feeding himself.	Laborer without horse.		Female laborers.	
			Feeding himself.	Food supplied.	Feeding themselves.	Food supplied.
BLACK SOIL—continued.						
North black soil—continued.		*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Penza	Spring	30	15	.....	8.5	6.5
	Summer	40	22.5	7.5	12.5	10
	Winter	42.5	20	15	15	10
Eastern and southeastern.						
Kazan	Spring	37.5	17.5	15	12.5	10
	Summer	42.5	25	17.5	16.5	12.5
	Winter	40	20	15	15	10
Simberia	Spring	47.5	20	12.5	10	6
	Summer	45	25	20	15	11
	Winter	50	25	20	17.5	14
Saratoff	Spring	50	20	15	10	7.5
	Summer	42.5	25	21.5	15	12.5
	Winter	47.5	25	22.5	17.5	14
Samara	Spring	40	17.5	15	10	7.5
	Summer	42.5	25	20	15	11.5
	Winter	47.5	27.5	22.5	17.5	14
Oufimsk	Spring	35	20	17.5	12.5	10
	Summer	42.5	25	.....	17.5	.....
	Winter	45	25	17.5	17.5	10
ARABLE SOIL.						
Industrial provinces.						
Moscow	Spring	57.5	22.5	17.5	12.5	10
	Summer	60	32.5	27.5	17.5	15
	Winter	57.5	32.5	25	22.5	17.5
Tver	Spring	50	22.5	17.5	14	10
	Summer	55	30	22.5	20	15
	Winter	57.5	30	25	22.5	17.5
Vladimir	Spring	62.5	25	17.5	15	10
	Summer	70	37.5	32.5	17.5	12.5
	Winter	67.5	27.5	22.5	20	15
Yaroslaw	Spring	65	27.5	22.5	17.5	12.5
	Summer	62.5	30	25	22.5	17.5
	Winter	67.5	32.5	27.5	25	20
Smolensk	Spring	45	20	16	12.5	9
	Summer	57.5	30	22.5	17.5	12.5
	Winter	55	27.5	20	17.5	12.5
Kalouga	Spring	42.5	20	15	11.5	7.5
	Summer	52.5	30	23.5	15	11.5
	Winter	52.5	30	25	17.5	12.5
Western provinces.						
Kovna	Spring	60	22.5	15	14	7.5
	Summer	62.5	27.5	20	17.5	11.5
	Winter	55	27.5	20	17.5	12.5
Vilna	Spring	42.5	17.5	12.5	12.5	7.5
	Summer	50	22.5	17.5	16.5	11.5
	Winter	52.5	22.5	17.5	17.5	15
Grodno	Spring	42.5	12.5	.....	7.5	.....
	Summer	42.5	21	.....	12.5	.....
	Winter	42.5	20	.....	15	.....
Vitebsk	Spring	42.5	20	15	12.5	10
	Summer	45	25	17.5	15	10
	Winter	47.5	25	17.5	17.5	12.5

Average price of field-hand labor in the Russian Empire for 1887 — Continued.

Names of provinces.	Period.	Laborer with horse, feeding himself.	Laborer without horse.		Female laborers.	
			Feeding himself.	Food supplied.	Feeding themselves.	Food supplied.
ARABLE SOIL—continued.						
Western provinces—continued.		*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Kinsk	Spring	37.5	15	11.5	10	7.5
	Summer	45	22.5	17.5	14	10
	Winter	45	25	20	15	12.5
Moghileff	Spring	35	19	15	12.5	10
	Summer	40	25	.....	15	.....
	Winter	42.5	25	20	17.5	.....
Central and transvolga	Spring	50	20	15	12.5	10
	Summer	55	30	22.5	17.5	12.5
	Winter	52.5	25	20	15	11.5
Nijni-Novgorod	Spring	40	17.5	12.5	11.5	7.5
	Summer	57.5	30	22.5	15	10
	Winter	55	27.5	22.5	17.5	12.5
Perm	Spring	47.5	22.5	17.5	15	10
	Summer	45	25	20	19	15
	Winter	42.5	25	20	20	15
Northwestern.						
St. Petersburg	Spring	65	27.5	20	17.5	12.5
	Summer	.....	37.5	32.5	25	19
	Winter	75	40	32.5	27.5	20
Pskoff	Spring	50	20	15	12.5	10
	Summer	55	30	22.5	19	13.5
	Winter	52.5	27.5	22.5	17.5	14
Novgorod	Spring	47.5	22.5	15	15	10
	Summer	57.5	32.5	25	20	15
	Winter	57.5	27.5	22.5	20	15
Baltic provinces.						
Lifland	Spring	57.5	27.5	20	17.5	12.5
	Summer	62.5	32.5	22.5	22.5	15
	Winter	65	30	22.5	22.5	17.5
Courland	Spring	72.5	30	22.5	19	14
	Summer	70	35	27.5	22.5	15
	Winter	72.5	35	25	17.5	14
Northern.						
Vologod	Spring	55	25	20	12.5	10
	Summer	55	30	22.5	20	15
	Winter	55	27.5	22.5	20	15
Olenets	Spring	50	27.5	17.5	15	10
	Summer	67.5	35	25	22.5	17.5
	Winter	65	40	27.5	25	16.5
Archangel	Summer	.....	.....	.....	20	15
	Winter	65	37.5	27.5	22.5	17.5
Caucase.						
Kouban district	Spring	.....	13.5	15	20	20
	Summer	.....	.....	42.5	.....	55
	Winter	.....	65	$1.45	70	87.5
Ter district	.....do	.....	.....	30	.....	26.5
Stavropol	Spring	75	30	27.5	.....	7.5
	Winter	$1.25	65	57.5	35	27.5
Tiflis	.....do	.....	35	.....	.....	.....
Koutais	.....do	.....	.....	42.5	.....	27.5
Siberia.						
Tobolsk	Spring	50	15	10	.....	.....
	Summer	30	17.5	17.5	.....	.....
	Winter	50	32.5	20	.....	.....

Average price of field-hand labor in the Russian Empire for 1887 — Continued.

Names of provinces.	Period.	Laborer with horse, feeding himself.	Laborer without horse.		Female laborers.	
			Feeding himself.	Food supplied.	Feeding themselves.	Food supplied.
ARABLE SOIL—continued.						
Siberia—continued.		*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Tomsk	Spring	35	19	17.5	12.5	10
	Summer	41	32	20	17.5	13.5
	Winter	35	25	32.5	22.5	20
Yenisee	Spring	(*)	.....	24	.....	17.5
	Summer	.....	.....	27.5	.....	25
	Winter	.....	.....	27.5	.....	26
Irkoutsk	do	75	50	35	35	25
Semipalatinsk	Summer	90	25	20	25	20
	Winter	75	25	20	20	15

*75 cents to $1.50.

FINAL CROP RESULTS.

In 1887, notwithstanding the low price of the principal grain products, causing a heavy loss to some farmers in many places, it may be considered on the whole a favorable year to the agriculturist. The crops of the eight principal cereals, with the exception of those reaped in the provinces of Tauride and transvolga, were everywhere abundant and in some localities most excellent. In truth, the total grain raised in European Russia shows not only an amount above the average of the past five years, but even greater than for any one single year since 1884. The oil-seed and hay crops were also very good, and although the prices of grain declined everywhere, those of oil seeds and flax remained firm. Lastly, the loss of cattle an account of epizooty was only half as large as that of the past years, and the price of cattle (thanks to a plentiful supply of forage and good crops) increased as compared with the prices of the past five years. Here and there, in the autumn of 1887, quotations rose even higher than those of the spring, a very rare occurrence.

If we take into consideration the local prices of cereals and the net crops (seed excepted), according to the central statistical bureau and the department's correspondents, we can calculate (as was done for the reports of 1885 and 1886) the approximate gross income which the agricultural proprietors obtained in Russia from the cultivation of grain. The net income for the fifty provinces of European Russia, and for the eight principal cereals—rye, winter wheat, spring wheat, oats, barley, millet, buckwheat, and maize—should then be estimated approximately as follows:

1883	$464,000,000
1884	492,000,000
1885	372,000,000
1886	440,000,000
1887	440,000,000

It will be seen from the above statement that while the yield from these cereals, independent of the abundant crops of other products, was much above the average of the past five years and greater than that of any one year since 1883, the income received was only equal to that of 1886 and far below that of 1884. This circumstance is due to the heavy decline in prices for all agricultural products during 1886 and 1887, so that despite the fact that every province showed a heavy increase in the harvests, proportionally lower quotations actually yielded a smaller income.

Nevertheless, if we take into consideration the good crops of oil-seed and fiber products and the good prices obtained for them, the rise in price of cattle, likewise the good price of wool and of other products of the farm, and lastly, the fact that the greater portion of cereals were not sold at the very low autumn prices, but during winter and spring, when prices had greatly improved, then we arrive at the conclusion that the total amount received by the proprietors of the Russian Empire in 1887 largely exceeds the amount received by them in 1886. According to the statements published by the agricultural department for 1887 it will be noticed that the proprietors throughout the Empire, with the exception of some districts already spoken of, in which the crops were bad, enjoyed a very satisfactory year.

The farmers, even in those districts in which the crops were bad, were fully supplied with forage for their cattle. The fine weather throughout most districts had a wonderful influence. The low grades of cereals were difficult to sell and could only be gotten rid of at a loss, although the prices generally were a little higher than during the autumn. In the southern sandy lands and the southwestern and black soil provinces, the farmer's income was very large for the year 1887, thanks to the abundant wheat crops and those of some of the oil-producing grains, but in the northern black soil provinces, the districts devoted to the culture of rye, even those which had good crops, yielded less profit to the proprietors than last year's average crop did. Most of the proprietors of the arable provinces have also complained of the considerable reduction in their income. In these provinces the proprietors who grew flax and hemp and those occupying themselves with dairy products were the only ones who received a fair income.

Generally speaking, the fall in prices of cereals has created in most districts a reduction in the renting of land, with one exception. Land in the province of Ecatherineburg advanced in value from 40 to 60 per cent. on account of the heavy crops of this year. The crops had been very poor for the last few years in this province. The rent of land in the northern black soil provinces fell from 25 to 50 per cent., in the central black soil provinces from 20 to 40 per cent., and in the western provinces 15 per cent.

Very little has been published concerning the crop of 1888, and that little is based upon estimates. Still, I give it below, as follows:

Crops of grain in Russia in Europe for the years 1885–'88 (estimate), Kingdom of Poland excepted.

Grain.	1885.	1886.	1887.	1888.
	Bushels.	*Bushels.*	*Bushels.*	*Bushels.*
Rye	708,000,000	666,000,000	750,000,000	732,000,000
Winter wheat	78,000,000	39,600,000	99,600,000	98,100,000
Spring wheat	100,800,000	122,400,000	180,600,000	158,400,000
Oats	391,200,000	570,000,000	621,000,000	552,000,000
Barley	100,800,000	134,400,000	169,200,000	141,600,000
Millet	24,000,000	64,500,000	52,500,000	47,520,000
Buckwheat	43,200,000	80,400,000	62,400,000	60,000,000

Of the above-mentioned cereals buckwheat was the only grain below the average. The millet crop was near the average. The remainder of cereals were above the average, and winter wheat was excellent.

In comparing the estimated crop of the year (1888) with the average crops of the last five years, we find that rye yielded an increase of nearly 60,000,000 bushels, or over 9 per cent. The increase in the winter wheat crop amounts to 27,600,000 bushels, or about 39 per cent., and spring wheat 6,000,000 bushels, or about 3½ per cent. Oats gave a surplus of 21,000,000 bushels, or 4 per cent., and barley 9,000,000 bushels, or about 6½ per cent. Millet gave an average crop, and buckwheat a decrease of 6,600,000 bushels, or about 10 per cent. If we add the winter and spring wheat crops together the full crop of wheat amounts to 256,500,000 bushels, and above the average crop by 33,000,000 bushels, or 14½ per cent.

Below is a table showing the general crop of the principal cereals in bushels, and the average for the last five years (1883–'87, inclusive), and for 1887 separately. The figures are taken from the report of the central statistical committee, and, as we have stated before, are given approximately.

In comparing the crop of 1887 with the average of five years' crops of the fifty provinces of Russia in Europe we find that the principal cereals gave the following results:

Grain.	Crop of 1887.	Increase or decrease for the last five years, 1883–'87.	Percentage of increase or decrease.
	Bushels.	*Bushels.*	*Per cent.*
Rye	750,296,418	+ 76,885,818	+11
Winter wheat	99,649,836	+ 29,448,396	+42
Spring wheat	180,521,664	+ 27,165,264	+14
Barley	169,575,816	+ 36,311,316	+28
Spelt-wheat	8,980,368	— 1,603,428	−15
Indian corn	13,080,708	— 4,264,092	−24
Buckwheat	62,887,050	— 4,190,550	− 7
Millet	52,360,734	+ 4,043,634	+ 8
Peas	19,195,158	+ 2,354,958	+10
Oats	623,318,034	+ 91,040,034	+17
Winter crop in general	849,946,254	+106,334,814	+14
Spring crop in general	1,129,919,532	+150,917,196	+15
All cereals	1,979,865,786	+257,192,010	+14½
Potatoes	317,402,940	+ 37,346,940	+13

Table of average crops and their variations, in bushels per acre, in each province of the Russian Empire for 1888.

Provinces.	Rye.		Winter wheat.		Spring wheat.		Oats.	
	Average.	Variation.	Average.	Variation.	Average.	Variation.	Average.	Variation.
Southern.								
Bessarabia	22	11 to 42	21	9 to 42	15	6 to 26	32	6 to 74
Kherson	17	8 32	19	8 32	12	5 24	20	6 40
Ekaterinoslaw	17	8 32	20	8 30	12	3 16	20	8 30
Tauride	21	10 30	21	10 40	13	6 20	16	6 34
Don district	13	2 36	14	6 36	13	2 26	20	2 37
Central black soil.								
Voronej	17	8 32	19	6 36	13	4 20	21	6 60
Poltava	17	4 40	18	4 40	13	4 26	21	5 40
Kharkoff	18	8 40	20	9 36	12	4 28	21	6 40
Southwestern.								
Kieff	24	4 41	24	10 40	18	6 30	30	6 54
Podolia	17	6 26	19	10 32	12	10 14	19	4 36
Volinia	10	4 16	15	6 21	10	4 22	15	4 70
North black soil.								
Koursk	15	6 30	18	9 30	13	8 18	20	8 38
Tchernigoff	11	1¼ 20	16	8 40	14	6 26	15	5 30
Orloff	13	4 20	18	4 44	10	8 12	20	10 39
Toula	17	6 28	23	8 33	.....	.....	23	8 44
Riazan	16	5 36	20	8 40	.....	.....	23	13 50
Tamboff	18	8 44	20	12 50	15	8 22	27	12 60
Penza	14	4 24	20	12 34	.....	.....	24	12 40
Kazan	12	3 36	.....	.....	12	6 24	18	6 64
Simbirsk	12	6 18	14	4 24	11	2 20	18	10 36
Saratoff	11	2 28	.....	.....	9	3 20	16	2 30
Samara	9	17	.....	.....	7	3 15	10	1½ 24
Oufa	15	8 24	.....	8 10	11	4 20	8	18
Orenburg	12	5 24	.....	.....	7	3 20	9	2 20
Astrakhan	.....	2 4	.....	.....	.....	6 14	.....	3 12
Industrial.								
Moscow	16	4 40	.....	16	.....	.....	19	6 48
Tver	14	4 28	.....	12	.....	.....	23	8 42
Vladimir	16	9 26	17	10 28	12	10 20	24	6 50
Yaroslaw	14	8 24	.....	.....	12	8 24	19	10 60
Smolensk	16	6 30	15	10 24	13	6 20	24	8 50
Kalouga	13	7 28	12	8 15	.....	.....	20	8 36
Western.								
Kovna	14	4 20	16	4 28	13	4 20	22	6 34
Vilna	12	6 30	15	8 26	12	6 16	15	6 32

Provinces.	Barley.		Millet.		Peas.		Buckwheat.	
	Average.	Variation.	Average.	Variation.	Average.	Variation.	Average.	Variation.
Southern.								
Bessarabia	20	8 to 42	20	8 to 32	15	4 to 24	18	10 to 26
Kherson	17	8 34	10	4 25	10	4 20	10	24
Ekaterinoslaw	18	12 30	13	4 30	15	8 24	8	2 20
Tauride	15	8 30	10	6 24	.....	6 10	.....	.....
Don district	17	3 40	10	18	.....	4	.....	.....

Table of average crops and their variations, in bushels per acre, etc.—Continued.

Provinces.	Barley.		Millet.		Peas.		Buckwheat.	
	Average.	Variation.	Average.	Variation.	Average.	Variation.	Average.	Variation.
Central black soil.								
Voronej	15	6 to 30	14	5 to 36	13	4 to 40	9	1 to 20
Poltava	16	4 34	13	2 28	13	4 30	12	40
Kharkoff	17	6 40	14	8 36	10	4 20	11	3 24
Southwestern.								
Kieff	20	6 32	13	6 22	16	10 40	10	6 20
Podolia	11	4 16	9	4 16	14	10 20	10	20
Volinia	11	4 24	10	4 24	9	3 14	9	4 18
North black soil.								
Koursk	13	4 20	11	40	11	2 24	8	0½ 20
Tchernigoff	14	10 32	14	5 30	12	4 24	7	3 20
Orloff	10	10 10	12	4 20	9	4 24	8	2 20
Toula	14	8 24	11	4 30	18	2 40	9	1 20
Riazan	.....	16	10	30	16	6 30	6	12
Tamboff	16	8 22	15	4 34	16	28	10	2 24
Penza	.....	20 30	10	2 20	18	6 30	11	2 20
Kazan	16	6 48	10	2 24	13	2 23	8	1 16
Simbirsk	13	10 22	12	2 20	14	6 20	7	2 13
Saratoff	12	4 22	9	0½ 20	9	2 20	7	2 18
Samara	5	10	6	19	8	1 18	.....	6
Oufa	8	0½ 20	12	4 24	11	6 20	10	4 30
Orenburg	7	4 13	8	4 13	8	2 16	.....	2 4
Astrakhan	.....	8 13	.....	2 14	.....	.....	.....	.....
Industrial.								
Moscow	15	4 24	.....	.....	14	1 24	10	0½ 16
Tver	16	28	.....	.....	12	4 16	6	2 10
Vladimir	17	10 28	.....	.....	13	3 20	7	2 12
Yaroslaw	11	4 24	.....	.....	14	2 24	12	12 12
Smolensk	17	6 26	.....	.....	15	4 40	14	2 24
Kalouga	18	7 34	.....	8 24	16	2 40	10	2 29
Western.								
Kovna	19	10 30	.....	.....	17	6 24	.....	12
Vilna	14	6 30	.....	.....	14	4 30	9	3 20

Condition of the crop, taking 100 as the average for the past five years.

Provinces.	Rye.	Winter wheat.	Spring wheat.	Oats.	Barley.	Millet.	Buckwheat.
Southern.							
Bessarabia	170	165	150	155	125	150	130
Kherson	160	170	140	110	110	80	90
Ekaterinoslaw	165	190	135	125	145	110	75
Tauride	200	200	135	120	110	150	.....
Don district	100	125	115	105	110	90	.....
Central black soil.							
Voronej	130	135	125	110	100	125	80
Poltava	115	120	120	103	110	120	130
Kharkoff	135	150	110	115	125	145	120
Southwestern.							
Kieff	145	145	150	120	110	102	100
Podolia	120	130	110	105	95	90	100
Volinia	80	95	100	95	90	90	85

Condition of the crop, taking 100 as the average for the past five years—Continued.

Provinces.	Rye.	Winter wheat.	Spring wheat.	Oats.	Barley.	Millet.	Buck-wheat.
North black soil.							
Koursk	105	125	130	100	100	80	70
Tchernigoff	90	110	105	100	103	115	90
Orloff	102	125	105	110	100	100	75
Toula	110	160	.....	120	95	100	80
Riazan	120	120	.....	120	.....	90	70
Tamboff	125	140	105	125	110	110	80
Penza	105	135	.....	130	125	85	110
Kazan	100	.....	110	100	100	105	85
Simbirsk	90	130	90	105	95	100	60
Saratoff	95	.....	95	95	100	80	65
Samara	70	.....	55	55	35	60	40
Oufa	110	.....	95	50	65	100	90
Orenburg	80	.....	50	50	40	80	30
Astrakhan	70	.....	120	80	.....	.....	.....
Industrial.							
Moscow	115	100	.....	95	95	.....	.....
Tver	110	.....	.....	110	110	.....	.....
Vladimir	120	110	100	120	110	.....	.....
Yaroslaw	90	.....	100	100	80	.....	.....
Smolensk	110	110	105	120	100	.....	.....
Kalouga	105	100	.....	110	125	.....	.....
Western.							
Kovna	100	110	90	130	115	.....	.....
Vilna	100	120	120	105	115	.....	.....

CHARLTON H. WAY,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
St. Petersburg, May 17, 1889.

TREATMENT OF YELLOW FEVER.

REPORT BY CONSUL VIFQUAIN, OF COLON.

Not being a medical man, I called upon the very best talent here for such information as I thought would be of service to the medical men in the States. I forward particulars of the disease and its treatment as furnished to me by Dr. James Thorington, resident physician and surgeon of the Panama Railroad Company and in charge of the hospital of that corporation here in Colon since 1882. He says:

Yellow fever has made its appearance here at any and all times of the year, but seldom as anything like an epidemic, and only then under exceptional circumstances. The reason why yellow fever on the Isthmus of Panama is sporadic and not epidemic is because here we have a temperature that ranges night and day, the year round, at about 78° to 85° F., and is just the temperature to produce yellow fever at any time. Hence, as new-comers visit the isthmus, unless they are proof against the disease by virtue of a previous attack, or are careful to take good care of themselves, they are liable to contract the disease at an early date; and thus, as new-comers become acclimated, there is less chance for an epidemic. In other words, we have not got the population to produce an epidemic.

Again, if we had here, as they have in the Southern United States, an annual lowering of the temperature, we would be perfectly free from yellow fever for the time being. It is this cold weather, or lowered temperature, in the Southern United States, that helps to cause the epidemics, by virtue of the fact that while it may kill the disease for a time, or keep it in check, a new population is growing up or coming in that has never had yellow fever, and after a period of four, five, or six years a single case appears and immediately spreads, as it has the ground to grow in.

After the destruction of Colon by fire in 1885 the Panama Railroad Company brought about one hundred dock builders from around Philadelphia and New York cities. These men were from a cold climate, had just passed through a cold winter, and were landed here in a tropical country, under the direct rays of a tropical sun, ignorant of the fact that they should not expose themselves, or dissipate, and what was the result? Nearly all took yellow fever and had a small epidemic to themselves. The disease did not spread to but a few of the inhabitants of Colon, and only those few got it because they would have got it in any way, whether there had been an epidemic or not. This was the only epidemic, if it may be so called, that I ever saw of yellow fever in Colon.

Speaking from my own personal and close study of the disease, and comparing it with published reports, I can not say that it is any different; it is only naming the disease from its locality or origin. This much I can say — that nearly or quite all the cases on the isthmus are serious cases from the start, and it is the rare exception and not the rule to find so-called mild cases. Therefore, if this fact can be called a difference, it would not be a misnomer to speak of it as isthmus yellow fever. Yellow fever is here, as elsewhere, marked at some seasons by a strong tendency to black vomit, and at other seasons by suppression of urine.

It is sometimes stated that the negro race is exempt from yellow fever, but I believe this to apply only to such of them as are born and raised in the tropics. It does not apply to colored people born and raised in the Northern United States. Chart No. 3, marked inclosure No. 2, was that of a colored sailor of northern birth. I have frequently seen natives from the interior of this Republic come here and soon contract the disease. One regiment of soldiers from the interior mountain region came to Panama in the summer of 1885, and nearly all of them got the yellow fever soon after arrival. The mortality was naturally great, as there was a great deal of carelessness and want of attention.

To say that "yellow fever by any other name would be as fatal" is an error. In former days, when pharmacopœa was small and old authors said "bleed, give calomel, and sweat your patient," then yellow fever was fatal; but now, no. Any physician of experience in yellow fever who has one or two reliable nurses and a few drugs at hand, given a case of yellow fever before it has advanced thirty-six hours, and I am sure he will cure it.

In my opinion, this once dreadful malady; this disease which has a dog's name hanging to it; this disease which by its very name of black vomit frightens the multitudes, is a disease of the past. It must not be allowed to continue. It itself must be buried. And now that we hold in our hands the means to take from this disease one of its worst dangers, I say emphatically that yellow fever is no longer or not now as fatal as typhoid and pernicious malaria. How different this from former days. Soon it will be a pleasure to glance over the records of past yellow fever epidemics and compare them with what the present or what the near future may bring forth.

In the beginning I read carefully the works of Laroche, Gamgee, Hargis, Schmidt, Ford, Salhian, and any book on practice that referred to yellow fever, and what do I find? The diagnosis as made by these was in the main good and correct, but the treatment, while it suited the times, varied, and was often contrary to general principles.

How is yellow fever then to be treated successfully? In all, I have tried various forms of treatment, and once felt sure that Ford (see the reports to the St. Louis Medical Society on yellow fever, by H. Ford, A.M., M.D., 1874) had struck the key-note to treatment, for my patients at first seemed to do well; but his treatment, too, failed. Then what to do? Every-

thing in the way of drugs seemed to have been tried and found wanting. For a time I banished medicines entirely, and, good nursing saved some of my patients; still there was that constant nausea, that irritable stomach, the black vomit. If I had something to quiet that stomach, my patients, most of them, must recover. My assistant, Dr. J. E. Jennings, first suggested cocaine as the anti-emetic, and we tried it faithfully. His brief report was made in the New York Medical Record of November 26, 1887, and is herewith inclosed and marked inclosure No. 5. Since then I have used cocaine in each case of yellow fever, and the success attending its use has been most marked and most gratifying. My colleague, Dr. F. A. Bettelheim, surgeon of the Panama Railroad, in Panama, writes me: "Since I have commenced to use cocaine in my yellow fever, as recommended by you and Doctor Jennings, I am proud to say that black vomit has disappeared and is no longer a part of the disease. Black vomit is an unknown quantity when cocaine is used." Black vomit, or vomiting, is not now a part of yellow fever, and what now remains of the disease to tax the intellect and worry the physician is the danger of suppression of the urine, and even here cocaine in some cases acts as a diuretic.

Before using cocaine, in 1887, as will be seen by reference to inclosure No. 1, black vomit was often a marked symptom, but now it never appears in any of my cases where cocaine has been used from the start, and rarely does it fail to check the vomit and even quiet the stomach when the case has not been seen until the fifth or sixth day of the disease. I find it often necessary to give doses twice and three times as large as recommended by Doctor Jennings in inclosure No. 5, and even oftener if the vomiting is not checked after the first and second dose. As for any toxic symptoms from the cocaine, I have never seen any, or any other bad results from its use.

By reference to chart No. 4, marked inclosure No. 3, it will be seen that the patient died of suppression of urine. In this case there was no black vomit, the stomach being kept at rest by the use of cocaine. The successful treatment of yellow fever may be summed up as follows:

(1) Getting the patient early, before forty or seventy-two hours, the earlier the better the prognosis.

(2) Patient never to be moved or transferred any great distance unless he can be dressed warm and walk himself, supported by one or two assistants. If distance is too great for the patient to walk and he has to be moved in a carriage or cars, or on a stretcher, it is best to inform family or relations that the jolting is most injurious and unfavorable.

(3) A darkened yet well-ventilated room and perfect quiet, for in the disease the mind is clear, and any noise, talking, or whispering irritates the head which is aching to burst.

(4) Good, competent nurses; good nursing being the greatest part of the treatment.

(5) Avoid a depressing treatment. The patient, no matter how strong, may require all the strength he can muster to carry him through.

(6) Do not treat yellow fever roughly because it happens to be yellow fever; on the contrary, make yellow fever your servant or it will soon be your master. Don't treat yellow fever at all, but treat your patient — study your patient's constitution.

(7) In treating yellow fever it is well to treat the symptoms only as they arise.

For headache.— The ice-cap, wetting the head freely with equal parts of Florida water and hot vinegar; a mustard plaster at nape of neck. The darkened room often relieves headache remarkably. A hot mustard bath often relieves.

For nausea or vomiting.— Recipe, cocaine hydrochlor., gr. 10; aq. lauro-ceras, drachms viij mft. sal. sig. ounces with drachms j of ice water, every hour as required. Locally, large mustard plaster over epigastrum.

Constipation.— If case is seen early, give two, three, or four improved compound cathartic pills, as may be necessary; later keep bowels open with Seidlitz powder each morning if necessary. Never give Seidlitz during effervescence. If it does not act, use enema, or warm water and castor oil.

Stoppage of urine.—Do not mistake for suppression. Always use catheter every six or eight hours in case patient does not urinate.

Suppression of urine, partial or complete.—Hot foot-bath; large mustard plaster over kidneys; small quantity of spirits of turpentine rubbed in over kidneys after the mustard plaster has been tried; hot poultices of digitalis leaves; sponging of entire body with warm gin. Internally give spirits juniper compound in half-drachm doses every hour or two; palatable, and patients call for it. The introduction of the catheter and allowing it to remain for half an hour often succeeds where everything else fails.

Insomnia.— Never use opium in any form in yellow fever. Give twenty or thirty grains of chloral per rectum, and repeat if necessary.

Delirium.—Keep nurse at bedside. See that the urine is coming freely; examine lungs; change patient's position.

High temperature, at or above 105 degrees Fahrenheit.— Antipyrine per rectum. Never use quinine in yellow fever. It is contra indicated, except in rare instances, when malaria showed itself during convalesence. (See chart No. 5, marked inclosure No. 4.)

Hemorrhages.— From ears, nose, etc., often good signs, and not to be checked unless excessive; generally stop themselves if left alone.

Nourishment.— Many patients die from indiscretion in diet during convalescence, and the nurse must be a competent and energetic one to refuse all the patient will crave. All solid food must be prohibited. A light, easily digested liquid diet is the only proper one, such as milk and lime-water, broths, etc. Whatever is given must be given in small quantities and often, as it is not well to allow the patient's stomach to remain empty for too great a length of time.

Sponging.— Sponging with warm water, or warm water and vinegar, or bay-rum, or gin, etc., often adds greatly to the patient's comfort, especially at night when clean, dry, and warm night-clothing are put on. This will often produce quiet and refreshing sleep.

Mortality in yellow fever.— Fifty or 55 per cent. of my yellow fever cases died before I commenced the use of cocaine. Since I commenced its use I have treated twenty cases, four of which were those reported in Doctor Jennings's article (inclosure No. 5), and of this twenty only three died. Five of this twenty were treated in the Panama Railroad hospital, and all recovered. Of the three that died none had the black vomit, but succumbed to suppression of urine. Chart No. 4, marked inclosure No. 3, was one of these. Cases seem to be doing better in hospital than in general practice for the reasons: (1) Being railroad employés I am called early. (2) If they are moved, it is but a short distance from the quarters to the hospital

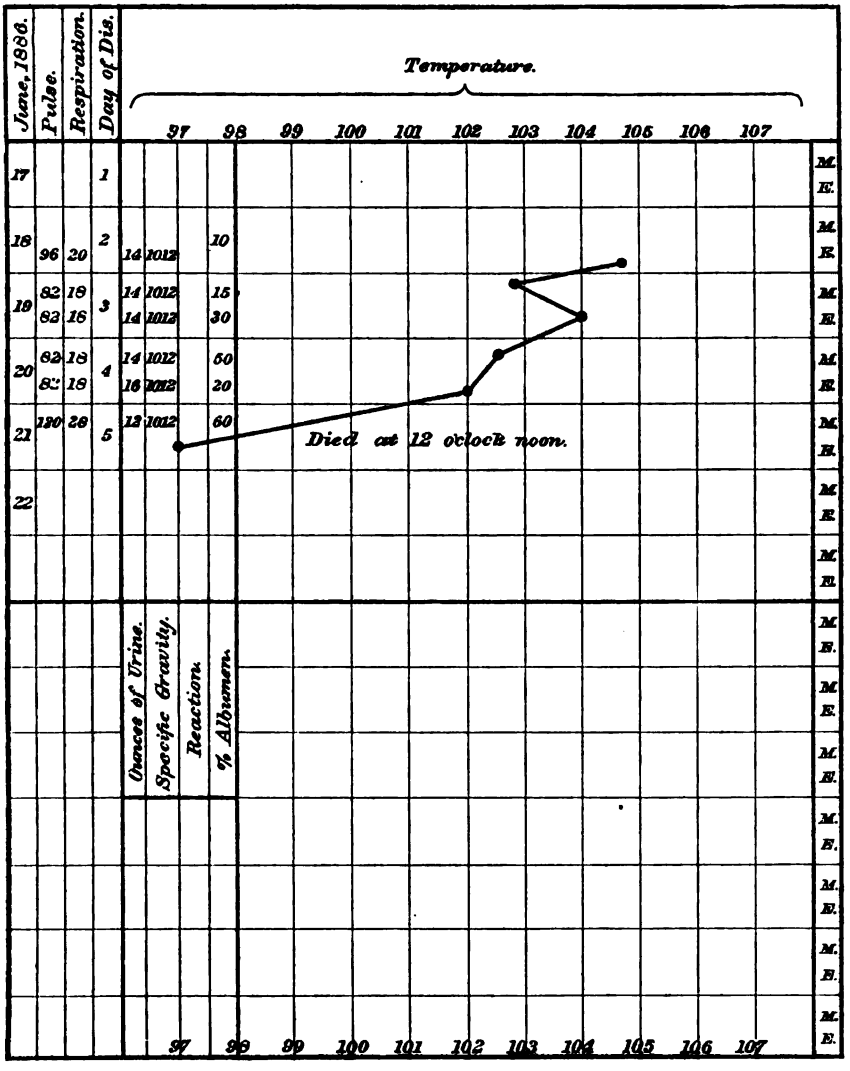
This is all I obtained from Doctor Thorington, and I trust it may prove useful. Yet my recommendation is to send doctors here to study disease and treatment. I am sure that General Newton, of the Panama Railroad, will give such doctors facilities to watch Doctor Thorington's treatment. The general is president of the Panama Railroad. I recommend this just as I would recommend promising young painters or sculptors to go and study the paintings and statuary of the old masters at Rome, Paris, or Antwerp.

VICTOR VIFQUAIN,
Consul.

UNITED STATES CONSULATE,
Colon, June 23, 1889.

[Inclosure No. 1 in Consul Vifquain's report.]

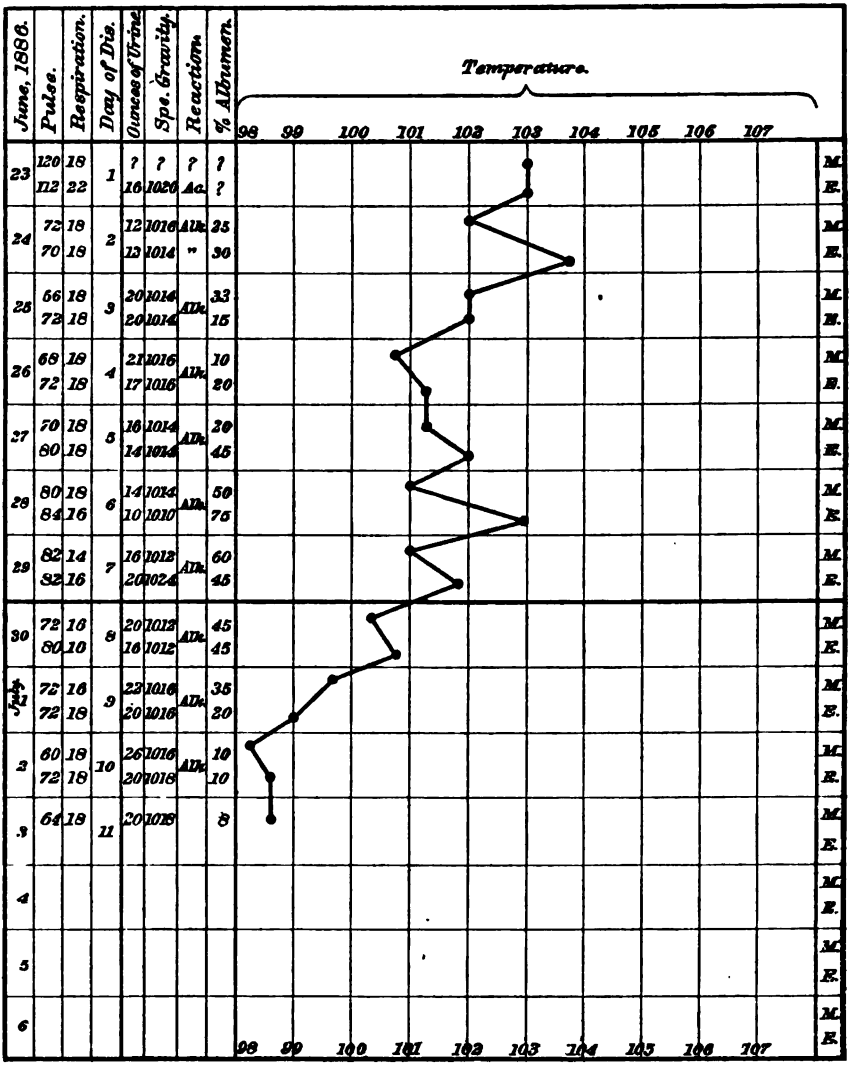
Temperature chart (2) of a yellow fever patient, aged twenty-eight, a locomotive fireman.



Active delirium commenced at 11.30 p. m., June 20, which lasted until near death. Hiccough and frequent black vomit in small quantities commenced at same time and lasted until 5.30 a. m., June 21, patient perfectly unconscious.

[Inclosure No. 2 in Consul Vifquain's report.]

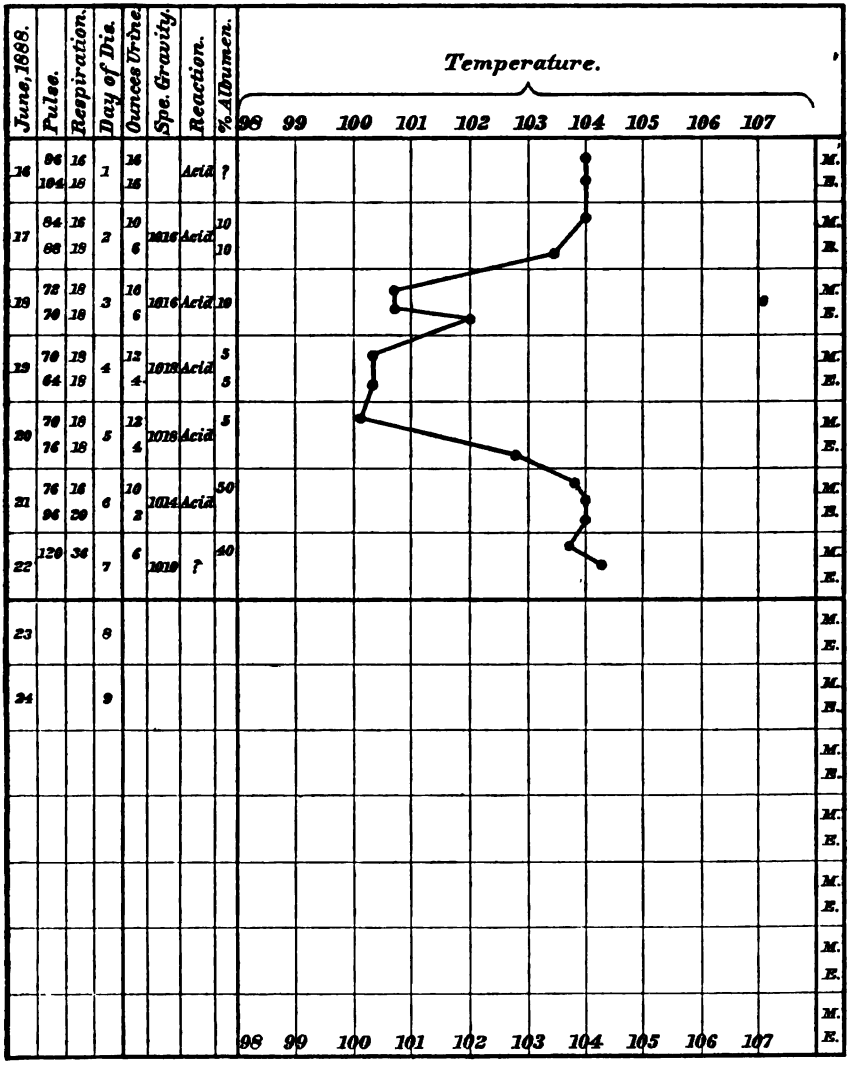
Temperature chart (3) of a yellow fever patient, aged twenty-four, a sailor.



Had small quantity of black vomit June 25.

[Inclosure No. 3 in Consul Vifquain's report.]

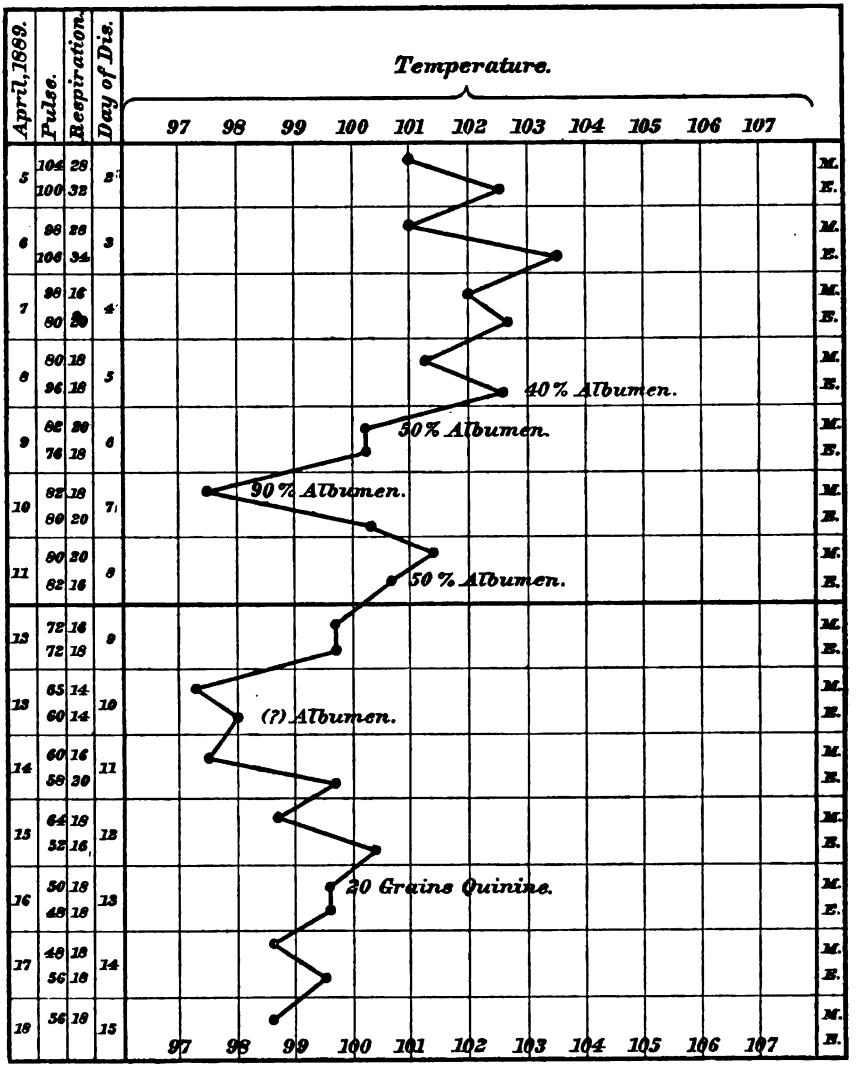
Temperature chart (4) of a yellow fever patient, aged twenty-six, a clerk in the Pacific Mail Steam-ship Company.



Taken sick with chill at 4 a. m., June 16. June 20, active and violent delirium at intervals. Pulse,80 at noon June 21. June 22, no pulse at noon, but heart beat at 1.20 p. m. Died soon after.

[Inclosure No. 4 in Consul Vifquain's report.]

Temperature chart (5) of a yellow fever patient, aged twenty-nine, a machinist.



Albumen in urine, evening of the 5th, 15 per cent.; 6th to 17th, 25 per cent. It was with great difficulty the albumen could be shaken out of test tube on the 10th.

[Inclosure No. 5 in Consul Vifquain's report.]

COCAINE AS AN ANTI-EMETIC IN YELLOW FEVER.

(From the Medical Record of November 26, 1887.)

Dr. J. E. Jennings, of Aspinwall, sends the following communication:

"As is well known, vomiting is one of the most constant symptoms of yellow fever. Occurring early, it marks the whole history of the disease, and in most severe cases gradually becomes more persistent until the characteristic 'black vomit' appears. All writers on the subject agree in the statement that the black vomit is a very grave symptom; hence any drug that can prevent or check this symptom would aid us very much in the treatment of this truly terrible disease. Lime-water and milk, small pieces of cracked ice, iced champagne, lime-juice, carbolic acid, pepsin, ingluvin, external applications, etc., seem to exert a favorable influence upon the vomiting, but up to the present moment no remedy has been brought to the notice of the profession that could be regarded as anything like a positive anti-emetic in this disease. Knowing the power of cocaine as a local anæsthetic, Dr. Thorington, physician for the Panama Railroad, and myself resolved to test its value as an anti-emetic in yellow fever.

"The following cases illustrate very happily the results we have obtained from the use of this drug:

"*Case 1.*—Miss L., Spanish, aged twenty-three, arrived in Aspinwall from Spain four months ago. When called in to see the patient she was found to be in the second stage of yellow fever. The following day black vomit appeared, for which we ordered 10 minims of a 4 per cent. solution of cocaine to be given with a little water every hour. The effect of the medicine was at once apparent, and after the second dose all vomiting ceased. Patient recovered.

"*Case 2.*—Miss H., Spanish, aged nineteen. Has been living in this city for the past seven months. This patient was thought by the family to be suffering from malarial fever until the fourth day, when her disease was recognized by the appearance of black vomit. At this time cocaine was administered as in case 1, with like success.

"*Case 3.*—Mr. S., American, aged forty-nine. Two months after his arrival in this city he was taken sick with yellow fever of a very severe type. Black vomit appeared at the end of the first twenty-four hours, but was at once checked by the administration of small doses of cocaine. In this case it was noticed that a considerable quantity of coagulated blood was passed from the bowels. Patient died on the fourth day, there being complete suppression of urine.

"*Case 4.*—Captain N., Welshman, aged forty-five. Was taken sick with yellow fever while his vessel was discharging coal in this port. Had copious black vomit on the third day, which was controlled by cocaine. Patient recovered.

"In the above cases from two to five doses were all that were necessary to control the vomiting. The patients rested easier, and seemed to relish the nourishment given them. At the same time it was noticed that the cocaine acted as a diuretic; under its influence the quantity of urine passed was somewhat increased."

AGRICULTURE IN THE REPUBLIC OF COLOMBIA.

REPORT OF VICE-CONSUL WHELPLEY, OF BARANQUILLA.

The modes of planting may be briefly explained. If corn is to be planted the surface of the ground is cleared with the machete and fire when practicable. The capitaz (overseer) indicates the extent of ground to be planted. A cabulla of land (about 300 feet square) is considered a daily task for four peons, a cuarteron to each.

With a hard wood stake, wedge-shaped, the peon makes a hole in the ground 2 or 3 inches in depth, a pace in advance, as he walks in and out among obstructing trunks or stumps. He throws in each hole from ten to twenty grains of seed, places his expansive toe on the loose soil that covers them, and this simple operation completes his share of the business.

Rice is planted in the same manner, only at closer intervals and with a lighter covering of soil. The land is extremely fertile, and in ordinary seasons will render an ample return for this primitive mode of planting.

In gathering the corn crop the ears are stripped off and the stalk left to decay in the field.

Women and children generally gather the rice crop. They grasp as many stalks as they can hold conveniently in one hand and with an ordinary table knife cut the stalk of the grain a foot or so below the head. When the laborers have as much as can be carried on their backs, or to load a burro, if they have one, the day's work is done. By this slow and wasteful process they will perhaps save half or two-thirds of the crop; the birds and animals take the remainder.

When the rice is sufficiently dry for use the bunches are taken down from the rafters of the ranch, the grain stripped off by hand into a large wooden mortar, called a pilon, to have the husk beaten off by wooden pestles, an operation that does not thoroughly remove the husk and breaks the grain. The rice, being often prematurely gathered not fully ripened, causes a shrinking of the kernel and closer adhesion of the husk.

There may possibly be in some favored locality a community willing and able to form a joint stock company to purchase a machine for hulling rice. Under existing circumstances there is not sufficient rice raised for local consumption.

Nearly all of the rice used at the sea-board towns is imported, and at the present time is from 7½ to 10 cents per pound here, Colombian currency.

There is no interest in matters pertaining to cultivation; no tools or machinery required; no reliable labor to be utilized by labor experimentalists.

S. M. WHELPLEY,
Vice-Consul.

UNITED STATES CONSULATE,
Baranquilla, April 30, 1889.

BOHEMIAN AGRICULTURE.

REPORT BY CONSUL JONAS, OF PRAGUE.

I beg to submit herewith a report on Bohemian agriculture and its results in 1888.

EXHAUSTION OF THE SOIL.

The statement has often been made that many of the farm lands in our Eastern States have become exhausted. Their productiveness is said to have declined in such a degree that cultivation at the present low prices of agricultural produce frequently does not pay.

The settlement of the eastern shore of our continent began about two hundred and fifty years ago. A moderate proportion of the soil of New England has probably been under culture for about two centuries. Most of the farm lands of the Northern and Middle States along the shores of the Atlantic have been tilled only from fifty to one hundred years. And yet we have grown accustomed to statements about the exhaustion of our Eastern farms, and such condition is often looked upon as a natural sequel of long cultivation.

This Bohemian country, with its boundaries marked by mountain ranges on all sides, except where it connects with the kindred province of Moravia on the east, was settled by an agricultural race of people in the fifth century of the Christian era. Already in the fourteenth century its population probably exceeded 2,500,000, whereupon, during the religious wars kindled by the Bohemian reformation, it declined. Previous to the Thirty Years' war it again had risen to some 3,000,000, sinking to less than 800,000 towards the close of that war. Since then the population has been rising steadily, until now it reaches nearly 6,000,000 upon an area of 20,000 square miles, not quite one-half the State of Ohio. Yet it may be said that the fertility of Bohemian soil is now as great as it was ages ago, if not greater. We do not hear anything about farms having lost their productiveness because of the long drain upon the powers of the soil, and Bohemian agriculture to-day stands equal to any in Europe, excepting, perhaps, the English.

PRODUCTIVE AND UNPRODUCTIVE SOIL.

A thorough survey of the Kingdom of Bohemia has been carried out at a great expense to ascertain the returns of the soil for purposes of taxation. According to that survey the whole area of productive soil is classified as follows, the hectare being a trifle less than 2½ acres:

	Hectares.
Fields, meadows, gardens, ponds	3,077,653
Clear pastures	382,303
Forests and brush	1,507,730
Total of productive soil	4,966,147
Total of unproductive soil	227,740

Hence only 4.38 per cent. of the whole area of Bohemia has been returned by the surveyors as unproductive.

Of the entire surface of the country — 5,193,887 hectares — the large estates contain 1,765,364 hectares, or about one-third of the whole country.

MANURING.

It is certainly not difficult to guess at the chief cause of this continued fertility of Bohemian farm lands. The soil of this country, which has now supported and nourished forty generations, aside from the regular exportation of its products for a long period, has retained its productiveness chiefly through manuring. Down to the middle of the present century only natural manure was employed in Bohemia. Since that time artificial manure has come into extensive use.

Of natural manure the main is, of course, that composed of animal dung and litter, the latter being of different kinds, but principally straw. At the present time chopped straw 4 or 5 inches long is much used for litter. As a preservative of manure, to prevent the escape of ammonia, its most important component, Bohemian farmers use gypsum or a mixture of superphosphate with kainit, a certain quantity of which is daily put among or under the litter.

Of artificial manure the following kinds are in common use: (1) Superphosphate, especially of bones and dissolved guano; (2) bone-dust, pure and chemically prepared, a ground bone; (3) kainit of Stassfurt; (4) Chili saltpeter; (5) Thomas dust, made of the dross of smelting works. The first two preparations are most commonly used on account of their intense effectiveness. A considerable number of mills for the production of artificial manure has sprung into existence throughout Bohemia. Among the best are those of Kolin and Pechek, in the upper Elbe valley, which prepare manure on a thoroughly scientific system for the various kinds of grain, fodder, and other products of the farm.

ROTATION OF CROPS AND CHANGE OF SEED.

The next important causes of the lasting productiveness of Bohemian farm lands are: (1) rotation of crops; (2) periodical change of seeds; (3) deep plowing.

The principle of rotation consists in carefully avoiding a succession of grain crops. Vegetables or grasses follow after a crop of small grain. Indian corn is not grown in Bohemia. Since the raising of sugar-beet has been developed to its present large dimensions it is of great help to the system of rotation, but successive crops of sugar-beet are equally avoided in order not to overtax the powers of the soil and to allow regular recuperation. The change of seed is effected by using at intervals seed from other sections and from other countries.

DEEP PLOWING.

Deep plowing means turning up the soil to a depth of 24 to 30 centimeters, whereas shallow plowing stops at 15 to 20 centimeters (2½ centimeters

being about 1 inch). But deep plowing must be done by degrees, not suddenly. Year by year the plow is made to go about 1 centimeter deeper into the ground until the desired depth is reached and maintained. The difference in the yield of the soil effected through rational deep plowing is, in most cases, truly wonderful. Deep plowing, however, to yield the desired result should always be accompanied by a corresponding increase of manuring. Plowing is always done in the fall. Spring plowing is considered almost valueless, and is often damaging to the crop.

THE CROP OF 1888.

According to the returns of the statistical bureau of the council for agriculture there were in the past year 96.97 per cent. of the whole arable area in Bohemia actually under culture. The cultivated area was divided among the different classes of products in this manner:

Crop.	Area in hectares.	Area in per cent.
Grain	1,625,254	61.80
Legumes	58,900	2.24
Beets and potatoes	494,237	18.22
Fodder	315,094	12.00
Industrial	52,523	2.11

The following table gives a detailed statement of the absolute and relative yields of the different crops, excepting a few which were grown on very small areas:

Crop.	Area.	Yield.	
		Total.	Per hectare.
	Hectares.	*Hectoliters.*	*Centners.*
Wheat	261,646	5,375,247	20.5
Rye	575,205	9,564,735	16.6
Barley	335,123	7,726,893	23.1
Oats	453,280	1,449,075	25.3
Legumes	58,900	563,604	9.6
Potatoes	339,826	27,943,455	73.2
Sugar-beet	120,060	27,400,460	228.2
Common beet	19,582	3,667,088	187.3
Cabbage	12,911	2,117,092	164.0
Clover	264,400	7,656,920	29.0
Mixed fodder	50,694	1,287,481	25.4
Rape	19,512	282,314	14.5
Flax, etc	28,448	106,693	3.75

Compared with American measures, 1 hectare equals nearly 2½ acres, one hectoliter 2⅝ bushels, and 1 meter centner 221½ pounds.

CHARLES JONAS,
Consul.

UNITED STATES CONSULATE,
Prague, May 9, 1889.

BOHEMIAN GLASS-WARE TRADE.

REPORT BY COMMERCIAL AGENT HAWES, OF REICHENBERG.

I have the honor to call attention to the depression of prices in the glass trade which now exists here. For some months I have noticed a falling price in the staple articles of export. During this period, also, business has decreased to an enormous extent. The exports to the United States for the quarter ended March 31 were about 136,000 florins less than for the same quarter last year.

A short time ago an American buyer presented himself to inquire if a certain firm was reliable, he having bought prisms at so low a figure that he feared they would not be delivered. The firm was one of the best in the business, and the goods were promptly shipped. I mention the incident only to show the depression of prices which exists.

With the view of presenting reliable information to the Department and satisfying myself as to the facts I have visited Gablonz, and I can not better show the depression which exists than by the following table, which exhibits a comparison of wages which could be earned by ten hours' work daily by the various workmen employed in glass manufacture (house industry) in the years 1887, 1888, and 1889:

Wages per day of ten hours.

Class of goods.	Class of workmen.	1887.	1888.	1889.
		*Florins.**	*Florins.**	*Florins.**
Crystal goods (drops, inkstands, salt-cellars)	Cutter	1.50	1.00	0.35 to 0.40
Jet-glass buttons (cut, pressed, painted, etc.)	Presser	1.50	1.00	.60 .70
	Cutter	.60	.50	.35 .40
	Painter	2.00	1.50	.50
Beads (am cuts, ¾ cuts, basket beads, etc.)	Breaker	1.00	.70	.20
	Cutter	1.50	1.00	.30
Hollow metallized beads	Blower	1.00	.80	.30

*1 florin of 100 kreutzers = 33.6 cents.

It will be seen that a workman can only earn from one-half to one-fifth what he received in 1887. In addition to this the small demand causes a still greater reduction of wages, as workmen can not find permanent employment. Most of the glass-ware is the product of domestic industry. In some few cases there are glass factories where better wages are paid.

Of course, no man can live on 20 kreutzers (8 cents) a day, much less support a family, and the result is that there is much suffering among the glass-workers. Subscriptions have been taken up for the relief of the starving families, and in the last five weeks alone over 6,000 people have been assisted and over 8,000 gulden expended by the committee having the matter in charge. Cases of scurvy and "hunger typhus" are not infrequent, and add to the prevailing misery.

Efforts will be made, when the weather permits, to employ many of the unemployed in road building, etc. Unfortunately, the prospect of a speedy resumption of the glass business is highly unsatisfactory. The demand for goods of this character depends largely upon fashion, and at present, at least, there is no demand for many of the articles.

An invoice was recently presented containing, among other articles, beads for embroidery, upon which a discount of 35 per cent. was allowed. I declined to recognize such an unusual discount until the shipper brought me certificates from some of the most reliable houses in Gablonz that on this article—"machine beads"—the manufacture of which is quite new in this district, the discount was usual and proper.

There are literally thousands of articles exported from this district, most of which are included in the term "glass-ware," and the prices vary so that it is next to impossible to keep posted. Beads, for instance, vary in price in accordance with the number of cuts they have been subjected to. One bunch of two-cut beads cost, in 1888, 30 to 50 kreutzers; in 1889, 15 to 25 kreutzers. One bunch of three-cut beads cost, in 1888, 40 to 50 kreutzers; in 1889, 22 to 38 kreutzers.

A firm having a large stock of prisms and needing money for other purposes will sell at a much cheaper price than a firm with a small supply and unembarrassed financially, and yet the sales are bona fide.

No market price exists. Each merchant seeks to undersell his rival to make trade, and the greatest secrecy and mystery pervades the entire business. One price prevails to-day and another to-morrow.

JNO. B. HAWES,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Reichenberg, April 15, 1889.

IMMIGRATION INTO THE ARGENTINE REPUBLIC.

REPORT BY MINISTER HANNA.

The immigration from European countries to these shores, hitherto chiefly Italian, Spanish, and French, is now rapidly setting in from other quarters—England, Scotland, Ireland, Holland, and Germany. It is marvelous, indeed, in what great numbers they are arriving. This element of new-comers will work a great change in agricultural development.

All this immigration is assisted by the Government by payment of the passage of the immigrants. In this way they are easily persuaded to leave the overdone Old World for the brilliant outlook of the New. The amount the Argentine Government paid last month for immigrants' passage is reckoned at $500,000. This, kept up throughout the year, would reach $6,000,000. Already this vast influx is beginning to tell on the volume of grain exports. Last year the country shipped 445,000 tons of corn; this year it will go above 2,000,000 tons. In addition to the vast sum paid out by the Govern-

ment in encouragement of immigration there is another great outlay. The Government lands the immigrant, keeps him and his family some days at the Immigrants' Hotel, pays his passage in river steamers and on railroad trains to reach the colonies or join the farms or estancias where employment has been secured for him. This probably costs the Government fully as much more as the cost of the ocean passage, say $12,000,000 in all, paid in encouragement of immigration in one year alone.

In the vast fleet of merchant ships and great steamers coming here to trade from every European port the United States flag is rarely seen, but it is hoped and believed that the policy of the new Administration on the subject of an encouraged steam navigation between the United States and the South American ports will successfully solve this embarrassment.

BAYLESS W. HANNA,
Minister.

LEGATION OF THE UNITED STATES,
Buenos Ayres, April 7, 1889.

RAILWAYS IN BOMBAY.

REPORT BY CONSUL FARNHAM.

The length of the various lines of railway under the control of the Government of Bombay in operation during the year 1887–'88 was 4,968 miles, or 288 miles more than the previous year. On the Great India and Peninsular Railway the work of doubling the line was in progress in the Jululpur and Nagpur lines. The Victoria terminal station and administrative offices in Bombay, a triumph of architectural skill, was completed.

The subscribed capital of the Great India and Peninsular, the Bombay and Baroda, and Central India and Southern Manhattan railways amounted at the end of the year to $187,937,500; the net earnings amounted to $9,775,000. The percentage of expenses to earnings was 46 on the Great India and Peninsular, 41.89 on the Bombay and Baroda and Central India, 65.97 on the Southern Manhattan, and 72.31 on the Mysore Railway. Compared with the net earnings of 1886 those of 1887 showed an increase of $75,000 in the case of the Great India and Peninsular Railway, owing chiefly to an increase in the number of third-class passengers and larger receipts for the conveyance of railway material. On the other hand, the net earnings on the Bombay and Baroda and Central India, Ragputana and Malwa railways exhibited a decrease of $268,000 and $270,000, respectively, owing principally to the failure of crops in the northern districts and the consequent diminution of the traffic in wheat and other grain, cotton, seeds, etc. The net earnings of five other shorter lines also showed a decrease.

B. F. FARNHAM,
Consul.

UNITED STATES CONSULATE,
Bombay, May 21, 1889.

UNION SLAUGHTER-HOUSES IN DENMARK.

REPORT BY CONSUL RYDER, OF COPENHAGEN.

I have the honor to present herewith a report on the swine slaughter establishments in this Kingdom carried on under the union principle.

The great success which has attended the erection of the numerous union dairies in the later years throughout the country was doubtless the cause of directing the attention of the parties concerned in swine exports to the establishing of slaughter-houses on the same system. This occurred at the time when the German Government, towards the close of 1887, prohibited the entry into the territory of that kingdom of all live swine and products from Denmark and Sweden owing to the outbreak of swine cholera in these countries, owing to which a most important market for this export trade was thus found to be suddenly closed. Ten of these establishments are now in full working order, together with eleven others owned by private firms. Although the movement in this direction has, without doubt, so far been of considerable advantage in developing the export trade of the slaughtered product, it may be prudent to weigh carefully the scope and future consequence that may tend to influence this enterprise before it is carried out to much greater extent.

It must be remembered that circumstances in 1888 were favorable, in many respects, to these establishments. The exports of pork from the United States were last year on a much smaller scale than usual owing to the greatly increased demand for the home consumption and to the higher prices ruling in the United States during a great part of the year as compared with prices in the European markets. Owing to these circumstances a large quantity of the American pork which in previous years was brought into consumption in England was last year, to the great benefit of these countries, enabled to be replaced by Danish and Swedish pork. Already with the opening of the present year indications of a great change in these relations have been made manifest. The price of pork in the United States has had a downward tendency, and large quantities thereof have already been forwarded to Europe, with every appearance of further shipments being made on a large scale during the year. Whenever there has been a large surplus production in the United States it has always been found that the same will be exported, sold, and consumed in Europe, no matter how greatly the prices may be depressed. Unquestionably the Danish pork has met with great favor in the English markets, and the customers in that country who have now been accustomed to it will in all probability still continue to give it the preference; but, at the same time, it will not be able to escape from the pressure caused by unusually heavy imports from the United States. Thus the owners of these slaughter-houses will do well to bear in mind the heavy losses that were incurred by similar establishments in 1885 from the excessive imports of pork from the United States in that year.

The increasing competition with other lands in the production of bacon must not be lost sight of. Sweden is now vigorously engaged in developing this branch of her exports, and there are already to be found in different parts of that Kingdom several large establishments for slaughtering and curing for export.

Russia, which was not taken into account as encroaching upon this domain, as her facilities of transport are being improved, would also appear to be using her best exertions to take a place in this production.

England, as is well known, is the great receiver of this production from all the competing lands; but even when one may dare to assume that England, true to her old traditions, will not attempt to hamper the trade in this article with the imposition of any customs dues, as also that pork will continue to be one of the staple articles of food of the great masses of the English population, it should be remembered that there must always be a limit to the quantity that can be consumed.

Here, as in other lands, it is the steady increase of dairy produce that is carrying along with it an increasing production of pork. There is at the present time scarcely any other way of making use of the enormous quantities of skimmed milk which are returned from the union dairies than by feeding swine; and in these days, at least, it is the production of small-sized slaughtering swine which is mainly expanded under the skimmed-milk course of food.

It would appear to be the opinion of many of the Danish agriculturists, taking all these circumstances into consideration, that the production in part of large-sized fat swine should not be entirely given up. It will be of the utmost importance again to recover the market of the western part of the Continent, which, on the average of the five years from 1881–'85, took yearly from this country 276,166 head of large swine, but from which Denmark was shut out in 1887 through the closing of Hamburg to these imports.

As no traces of fatal disease have for some time been found in existence in any part of this Kingdom, owing to the prompt and energetic measures taken by the Government on the first outbreak, it is to be hoped that this prohibitory decree may shortly be withdrawn, more especially as the chambers of commerce of Hamburg and Kiel have addressed petitions to their Government with the request that they would take this matter into their favorable consideration in the interests of the trade of these commercial centers. It is of equal importance to the agricultural interests in this country. It is felt that the steadily increasing swine production is placed in great danger in being left, as it now is, mainly dependent upon the English markets as recipients of their redundant stock after supplying the home wants, more especially as this is mostly confined to a one-sided class of slaughtering animals. Herein, also, lies the danger that may arise from a too greatly forced extension of the slaughter establishments. Furthermore, the whole business of the production and sale of bacon in England is of such nature that it requires special knowledge and ability, both in a technical

and mercantile point of view, to allow of its being carried on with success, and the demands in this respect will naturally be more and more exacting, in the same ratio as competition increases. It is thus evident that much will depend upon the capacities of those to whom the controlling management is intrusted. In the rules laid down for the administration of the slaughter establishments one of the provisions to be found is that the shareholder, on delivery of the animals, shall receive payment therefor at the market price of the day, whilst, however, 1 öre (about one-quarter cent) per pound, live weight, shall be retained from the amount until the closing of the books at the year's end as guaranty against losses that may accrue to the society.

It is questionable how far such an amount would reach in proportion to the risk of such large transactions, under such unfavorable conditions, where a week's slaughtering might be attended with mishap, or when the goods during a continuance of depressed market may have to lie over so long that an essential loss in quality may arise.

That the regulations in respect to prices paid for the animals are not always strictly observed by all the slaughter establishments would appear from two advertisements lately inserted in one of the provincial newspapers. In one of these it was announced by one of the establishments that the following prices would be paid, viz: For swine of 120 to 150 pounds, slaughter weight, 30 öres per pound; 110 to 119 pounds, 33 öres per pound; 151 to 159 pounds, 33 öres per pound; and for swine above 160 pounds, 31 öres per pound, together with a premium of 2 kroners (53.60 cents) per 100 pounds for lightly and 1 kroner (26.80 cents) for medium fattened. The other advertisement, from a slaughter establishment in Fyner, announced that it would pay 39 öres per pound for prime lean swine of 100 to 150 pounds, 38 öres per pound for medium fattened swine of 100 to 150 pounds, and 36 öres per pound for fat swine of 100 to 150 pounds.

One great advantage that has certainly been obtained through this movement towards establishing these export slaughter-houses is the tendency which they have given to the regulation of the prices of swine, the necessity for which was so greatly felt when the prohibition of imports into Hamburg occurred in 1887.

From the existing union slaughter-houses sufficient materials are at hand for affording ample experience to admit of passing a correct judgment on the results of their operations after these have been some few years at work under more or less favorable circumstances, and it will be most prudent to await the probability of a re-opening of the former course of trade in large-sized fattened swine to Germany before proceeding much further in binding the production too closely down to a bacon manufacture.

HENRY B. RYDER,
Consul.

UNITED STATES CONSULATE,
Copenhagen, June 7, 1889.

OATMEAL FOOD.

REPORT BY CONSUL UNDERWOOD, OF GLASGOW.

During my residence in Scotland I have been impressed by the wholesome, ruddy complexions of the people, not only of men but of women and children, and have admired their sturdy frames, firm muscles, and power of endurance. This fine physical condition is due partly to inherited qualities, partly to the fondness for outdoor sports and exercise, and largely to the daily use of preparations of oatmeal.

In the United States wheat is universally used in the form of superfine flour. The millers have striven by every art to produce flour of excessive whiteness and fineness, and they attain it by throwing away the envelope which contains the greater part of the nutritive and bone-producing elements of the grain.

The only other grain in general use is maize, or Indian corn, and, though this has many most desirable qualities, its use is in a way wasteful and (to many people) injurious, because the meal requires no less than four hours' cooking at boiling point (212° F.) to make it digestible. The vast number who habitually eat "mush," "stir-about," or "corn-pones," cooked in from fifteen to thirty minutes, may object to the statement, but it is made by physiologists and chemists of the highest authority. After four hours' cooking—not a minute less—corn meal becomes suave and freely digestible. If not so cooked, it is never wholly mastered by the stomach, and becomes both a waste and a source of irritation.

The oat contains all the constituents necessary for the maintenance of high bodily vigor, and is one of those complex foods that, especially with the addition of a little fat, is capable of supporting life for an indefinite period. In the border forays of the twelfth and thirteenth centuries the provision carried by a Scottish soldier was simply a bag of oatmeal. In the great majority of families, rich and poor, the day is begun with a breakfast of oatmeal-porridge and milk. When the porridge and milk are abundant and fresh there is scarcely need or desire for animal food, certainly not more than once a day. The chemical composition of oatmeal is as follows:

	Parts.
Water	12.92
Nitrogenous matters analogous to gluten	9.78
Nitrogenous matters which do not serve for nutrition	1.95
Fat	6.04
Carbohydrates:	
Sugar 2.22	
Dextrine and gum 2.04	
Starch 51.17	
	55.43
Woody fiber	10.83
Mineral matter	3.05
Total	100.00

If a grain of oats is cut transversely and looked at with a lens, there is seen (1) the outer layer like a bran of wheat, (2) a thin membrane, (3) a circle of gluten cells, (4) starchy matter. The oat contains more fat than any other common cereal except maize. It is not contended that oatmeal is more nutritious—using that word in a scientific sense—than wheat flour, but it is a better bone producer, and its large proportion of fat renders it a better balanced food. A person could live with more comfort on oatmeal alone than on flour alone.

Comparative analysis.

Description.	Water.	Nitrogenous substances.	Fat.	Starch.	Woody fiber.	Ash.
Oatmeal	10.46	15.50	6.11	63.67	2.34	2.02
Rye meal	14.24	10.97	1.95	69.74	1.62	1.48
Fine wheat flour	14.86	8.91	1.11	74.18	0.33	0.61
Seconds flour	12.18	11.27	1.22	73.65	0.81	0.84

To establish the value of oatmeal, especially for growing children, is an easy matter, whether we depend upon analysis and reason or upon long and uniform experience. Unfortunately, the subject has of late years acquired a deep and national interest by the deplorable results which have followed the unsanitary conditions, and especially the poor feeding, of the lower classes in cities. Nothing in the condition of Scotland to-day is so painful to the benevolent or the philosophic observer as the spectacle presented in Glasgow of deformed men, women, and children. For men may be raised from irreligion and ignorance, reformed from drunkenness, and from any uncleanness; but who shall straighten crooked backs, bring dwarfs to the average height of mankind, and set their bodies upon symmetrical legs and feet? What shall make them progenitors of a healthy and vigorous race? I can not pretend to give statistics, and they would be useful only to medical men, but from my observation I am confident that no city in western Europe, and certainly none in the United States, has anything like the amount of deformity seen in Glasgow. In my daily walks I see hundreds of cases, and they are almost always cases of deformed limbs. There are wards in the hospitals especially for the treatment of these cases. The legs are broken, and then reset with splints, by which means the painfully grotesque twists are somewhat straightened. It appears to me that this soft and weak condition of bone becomes transmissible, and that there is danger of perpetuation of dwarfish statures and of other congenital irregularities.

The causes of this degeneration are quite evident. Old Glasgow was closely covered by high buildings, in which there was little light and air and few sanitary requirements. As the pressure into close quarters increased poverty came to shorten the supply of food, and intemperance made everything worse.

Much has been done by demolishing these pestilential buildings and by erecting model lodging-houses, but much yet remains to be done, for a large

proportion of the families still live in apartments of one, or at most two rooms. Toward a reform in the housing of the poor strenuous efforts are now directed both by the city authorities and by philanthropic societies.

Rachitis (rickets) is a disease which is due to the absence of a sufficient proportion of phosphate of lime to give the bones stability. It prevails where children have deficient or improper diet, in crowded, ill-ventilated apartments, in streets where sunlight seldom comes and where foul odors abound.

The children of the poor in the country seldom have it, nor do the middle and upper classes in cities. Children in agricultural districts, fed on coarse food and having air and exercise, are almost always robust. In *rachitis* the cause is diminution in quantity of phosphate of lime and other salts. It is not owing to the absence of any particular ingredient, nor to the presence of any foreign constituent. It was claimed that the disease became more prevalent in Glasgow after the introduction of water from Loch Katrine, which is almost absolutely chemically pure. And it is true that in Glasgow the quantity of lime taken by each person as carbonate in this perfect drinking water does not exceed one-fourth of a grain a day; but in cities which use hard water the quantity is only 4 grains a day, totally insufficient, as the following observations will show.

A child of from four to eight years requires (as a moderate quantity) 20 ounces of milk daily. In this there are 50 grains of saline matter, much of which is phosphate of lime. So the quantity taken in drinking water, more or less, makes little difference to the child. Looking at the quantity of lime in food (from cereals), the ash or mineral matter of wheat flour is eight-tenths of 1 per cent.; in oatmeal, 2.1 per cent.; in Indian corn, 2 per cent. And this is the partial analysis of 100 parts of this ash:

Grains.	Lime.	Phos. acid.
Wheat flour	3.4	50.7
Oatmeal	8.5	42.4
Indian corn	3.1	44.5

The mineral matter consumed each day by healthy adults averages 170 grains, of which 33 grains are carbonate of lime, so that for adults, as for children, the 4 grains in hard water make little difference.

One can hardly say where certain prejudices and absurdities have their origin. But after centuries of experience with oatmeal there arose a repugnance towards it among the people who most of all had need of it, the poor of Glasgow. It began to be considered the badge of poverty and was scouted. Everywhere wheat flour and baker's bread were used; and, as every one knows, the process of bolting destroys a great part of the value of flour, for the outer layer contains more of the nutriment and nearly all the mineral matter of the grain. Then came the tea-pot, almost as great a bane in its results as the whisky bottle. The poorest woman must have her tea, and many times a day, even if thereby she spent the pence which should have

bought milk for her children. And, in fact, even to-day in a multitude of Glasgow families the staple articles of food are white baker's bread and hot tea. The quantity of milk bought is wholly insufficient, especially for growing children. Butcher's meat, of course, is only an occasional luxury.

Without pursuing this matter more in detail, it is clearly seen that *rachitis*, with its horrible results, follows innutrition, and that, if the poor people of Glasgow had stuck to oatmeal and milk, they would have mainly saved their children from this prevailing disease.

There is a fear that this wrong-headed and silly feeling in regard to oatmeal may spread into rural districts, for it was observed that when there was a temporary scarcity, almost a famine, in one of the western islands about a year ago, and the authorities of Glasgow proposed to send oatmeal to feed the school-children, the offer was declined with (or without) thanks.

Meanwhile, at the tables of all well-to-do people oatmeal-porridge and cakes are as constant as the prefatory blessing. I hear that a project is under consideration to establish in the east end of Glasgow neat and attractive places where well-prepared porridge and milk will be sold for a penny. Whatever else is done for the redemption of those 100,000 poor, and much is certain to be done, nothing will be wholly efficacious without a return to the diet that made their ancestors the finest soldiers and the most stalwart workers in the British islands.

PREPARATION OF OATMEAL.

Every person of simple tastes, unspoiled by highly seasoned food, recognizes a flavor (and a slight perfume) in porridge skillfully made of the best oatmeal in Scotland which is seldom met with in the United States. The flavor somewhat resembles that of freshly popped corn, so well known in the United States, and undoubtedly comes from the process of kiln-drying, hereafter to be mentioned. It may be said here, in general, that the secret of good, sweet oatmeal is mainly a matter of care and cleanliness, the exclusion of all dirt and dust, and is not at all a matter of chance.

At the mill oats are put in the kiln, which (in the case used here for illustration) is the upper floor of a chamber, about 18 feet square, having a floor of perforated iron plates.

The heat comes from a furnace of anthracite or other smokeless coal, placed about 24 feet below the floor. The heat must be absolutely free from smoke, otherwise the grain will be discolored, and, what is worse, will have a repulsive taste. I could not get the degree of heat, as a thermometer is not used. The workmen simply drop a little water upon the floor, and when it "bizzes" in a certain way they know it is hot enough. The ventilation is by an opening in the roof, through which the steam escapes. Oats require a sharp and constantly sustained heat, care being taken to prevent their being burned by overheating. The miller observed that oats need a stronger heat than either wheat or Indian corn. Oats which have been properly cared for at the farm should not contain impurities to be cooked with them, and should

be allowed to lie four hours in the kiln, during which time they must be carefully turned at least three times. A kiln 18 feet square will accommodate 90 imperial bushels of oats at a time. Short oats (*i. e.*, oats with short grains) require less drying, but the long oats produce the sweetest meal.

After drying (and a slight parching is thereby understood) the grain is drawn off into a hopper, where it should lie for a day before being put in bags to be ready for the succeeding processes. Two days should elapse between the drying and the beginning of the milling, during which the grain cools slowly. If put into the mill before it is well cooled the meal will not be so sweet.

MILLING.

The oats pass from a hopper through a machine called a "dickie," containing two sieves, the first of which allows the oats to pass, but retains any foreign substances. The oats pass through the second sieve, where again any dirt or remnant of weeds or stalk adhere to the sieve, and then the oats reach the shelling stones, by which the husks are separated from the grain. The shelling stones are 4 feet and 8 inches in diameter, and are made from graystones procured principally from Yorkshire. The under or bed stone, which is stationary, has a surface bristling with points; the upper stone has its under surface of the same character, and moves with great velocity, raised about one-half inch above the bed. The velocity is so great that it is observed that the oats, in falling through the opening, are all perpendicular, as it were, suspended all endwise. The grain is made to pass twice through the shelling stones to insure thorough separation, after which it falls into another sieve, and then into fans, where the husks are blown out. The pure grain is then elevated to a hopper, to be passed through the grinding-stones.

GRINDING.

The object aimed at is to cut or break the grain into small particles, but not to crush it into flour, which is unpalatable. Unlike the particles of maize, oatmeal is digestible with a comparatively short cooking.

The best stones are of French "burr," having the surface well honeycombed. They are 4 feet and 6 inches in diameter, and are laid in the same manner as shelling stones. The surfaces (of the points) must be kept sharp and well polished in order to make sure that the grain is well cut, for, if the points of the stone become blunt, the meal will be floury and of inferior quality. The meal passes from the stones into a box containing three sieves of graduated apertures, the upper No. 8, the middle No. 9, and the lower No. 10, of wire gauze. After passing through these three sieves (to remove any foreign substance still remaining) the meal is ready for consumption.

Oatmeal of a recent crop and freshly ground is best. If not to be immediately used, it should be kept in hermetically sealed cans; otherwise, by absorbing moisture, it will lose its delicate flavor or become sour and moldy.

RAISING OATS.

It is quite uncertain whether the rules observed in Scotland by farmers will be of much service in the United States, since the soil and climate are so different. But, as the crops here are considerably more than double those ordinarily gathered by our people, perhaps some useful hints may be given. Heavy soils produce the best oats for human food. The oatmeal of Midlothian (vicinity of Edinburgh) is much vaunted and liked, but its superiority over that of other good districts is a matter of opinion. If such superiority exists, it is owing to better modes of cultivation, and especially to atmospheric conditions, as there is far less rain there than on the west coast. Midlothian oats weigh, on an average, 42 pounds to the bushel, and those of Ayrshire 36 pounds.

Whatever superiority there is in the oatmeal of Midlothian, or elsewhere, comes mainly from the care and attention in treatment—drying, handling, cleaning with sieves and fans, and the keeping of the milling-stones in perfect condition, as before explained.

QUESTIONS ANSWERED BY FARMERS.

As to species, any variety of long oats is preferable to any kind of short oats. The species best liked in Ayrshire is known as "Tam Findlay" oats. As to preparation of soil, a medium soil should be well drained with pipes placed from 30 to 36 inches deep and from 16 to 18 feet apart, according to the nature of the subsoil. It should be manured with from 3 to 6 cwts. per acre of dissolved bones, according to the need of the soil.

Plow as soon after the new year as the weather will permit, and sow the last week in March or the first week in April, or as soon thereafter as the weather allows.

After reaping proper attention must be paid to keep the sheaves or stacks standing, so that the ears shall not lie upon nor touch the damp ground; otherwise they will sprout, or at least become discolored, and thereby injure materially the quality of the meal. A fair average crop is 60 bushels to the acre, and 5 bushels the usual quantity for sowing.

Another farmer gives similar directions, and adds a few remarks. When we break up the land we take three crops from it in succession—two crops of oats and one of hay. The best method is, when the hay crop comes off, to give it a coating of farm-yard manure, about 20 tons to the acre. This gets it early into good pasture land. About a year before it is to be broken up again we give it a coating of lime, about 6 tons per acre. We generally put about 2 cwts. of bones per acre on the oats of the second year. Put the seed into the land when it is thoroughly dry; it is of great consequence to the crop that the seed has a dry bed.

The instructions for making stacks and ricks are not important for farmers in the United States. This farmer considers an average crop to be 48 bushels, and from 5 to 6 bushels the proper quantity for seed. Seed oats are worth from *2s.* to *2s. 6d.* per bushel.

I may add that I saw a field of oats in Ayrshire two years ago which was said to have yielded 80 bushels to the acre.

Before closing I desire to state that I have received valuable assistance in the preparation of this report from Dr. J. B. Russell, the chief medical officer of Glasgow, and from a treatise by Professor Wallace.

F. H. UNDERWOOD,
Consul.

UNITED STATES CONSULATE,
Glasgow, May 9, 1889.

THE PORT OF MARSEILLES.

REPORT BY CONSUL MASON.

RECENT IMPROVEMENTS AND PRESENT FACILITIES.

For some unexplained reason it is customary in speaking of European sea-ports to include only those which open upon the Atlantic ocean or the North Sea, and Hamburg is, therefore, usually rated as the leading commercial port of continental Europe. The fact is that this supremacy belongs to Marseilles, which, in respect to the number and tonnage of arrivals and departures and the bulk and value of their cargoes, stands fifth in the list of European ports, being surpassed only by London, Liverpool, the Tyne ports, and Cardiff. As a work of costly and elaborate construction the new harbors of Marseilles rank among the first in the world. They are not yet entirely complete, but such steady and successful progress has been made during the past five years that a brief résumé may be given of the works now finished and in active construction.

For more than twenty-four centuries the only harbor or sheltered anchorage at Marseilles was the small, land-locked bay known as the old port, which has an area equal to only about 70 acres. Here the Phoceans, from the Greek colonies in Corsica, landed in the five hundred and ninety-ninth year before the Christian era; here the Massilia of antiquity was founded and flourished; here the armies of Cæsar and Marius landed during the Roman occupation of Gaul, and for more than two thousand years this little haven was one of the principal marts of the world's commerce.

It was not until as late as 1820 that some improvement of the old port was undertaken by widening the quays along its southern shore at the expense of its area and by deepening the more shallow portion near the center. The work was continued on the northern and eastern sides in 1839 and 1855, respectively, and it was during the latter year that a Roman war galley, 95 feet in length and in excellent preservation, was unearthed at a depth of 20 feet in the mud and débris of the shore. But by this time sailing ships had become so large, and the commerce of Marseilles so extensive, that the old port would no longer suffice, and under a national statute enacted in August, 1844, the engineers of Louis Phillipe began the construction of the Port Joliette, the first of the five magnificent artificial basins or docks which now constitute

the new harbor of Marseilles. As soon as the Joliette was completed the Basin Lazaret, next in order, was begun, then the basins d'Arene, Gare Maritime, and National, successively, the last of which is now practically completed, and work is being pushed beyond to the new petroleum docks in front of Cape Pinéde, inside the line of the outer jetty or sea-wall, but outside the limits of the harbor proper.

The five basins above named are ranged along a rocky shore which was formerly entirely exposed to the sea, and was a dangerous anchorage in heavy weather. The one requisite for a harbor, furnished there by nature, was a firm, rocky bottom, more or less uneven, at a depth of from 30 to 60 feet. Upon this there was constructed a jetty or sea-wall 2¼ miles in length, with an angle of 30° half a mile from the southern extremity so as to fit the form of the harbor to the curved line of the shore. This breakwater, like all the masonry of the new ports, is of massive strength and solidity. The wall is 24 feet in height above sea-level by 20 feet in thickness at the top, with enlargements at intervals, buttressed and pierced for cannon to admit of ready arming in case of war. Along the inside of the breakwater a wide quay is built and the outside or sea-front is faced with huge, built-up blocks of stone, irregularly disposed so as to present a broken and irregular surface to the waves.

The five ports already designated by name are simply divisions of the space inclosed between the breakwater and the shore. They are divided from each other by wide moles, most of which are covered with sheds and warehouses, and through which openings are left spanned with draw-bridges, so that vessels may pass freely from one end of the harbor to the other. There being no tides in the Mediterranean, and only a variation of a few inches in the water-level as the result of certain winds and currents, the construction of the wharves and piers involved no engineering difficulties. There was a solid bottom to build upon, and rock in unlimited quantities along the shore south of the city and on the islands of Frioul, only a mile from the entrance to the harbor. The general height of the wharves above water-level is 6 feet, but in certain places this is increased to 8 or 9 feet for the convenience of large steam-ships or for the handling of live animals and other special classes of freight.

The new ports have a nearly uniform depth of from 25 to 30 feet and an aggregate area of 955 acres, all of which is available space for the movement of vessels of any tonnage or ordinary draught of water. The wharves and quays, along which vessels may be moored for the loading or discharge of freight, have an area of 176 acres and a lineal frontage of 14,673 meters, or more than 9 miles. All this relates to the new ports constructed since 1844, and is exclusive of the old port, which is reserved as a place of anchorage for yachts and fishing craft, and for the uses of sailing vessels, most of which are engaged in the Mediterranean trade.

In the classification of business in the new ports, the Port Joliette is mainly devoted to steam-ships which carry passengers. They include the

large vessels of the Messageries Maritimes, which ply between Marseilles and Australia, China, India, and the eastern Mediterranean; the Compagnie Generale Transatlantique with lines to Algiers and Tunis, and various French and foreign lines which run to Spain, Corsica, and Italian ports. The basins Lazaret and Arene are usually assigned to steamers and sailing ships which make long voyages and bring ores from Italy and Spain and the products of India, Australia, and South America. Along the wharves of the port of the Gare Maritime are found vessels with wheat from Russian, Indian, Australian, and American ports, and the great steam-ships of the British Peninsular and Oriental line.

The Basin National is occupied mainly by colliers from Cardiff and the Tyne, steamers from Algeria, Tunis, and Italy with live cattle and sheep, and the further section beyond mole D has been used hitherto as a petroleum dock, but this will be transferred during the present year to the new petroleum wharf still further out, under the slope of Cape Pinéde. Within the Basin National is also the anchorage for foreign war vessels, and along the Quai des Anglais are the berths assigned to the French steam-ships which ply regularly between this port, New York, Rio Janeiro, Buenos Ayres, and Montevideo. Connected with the Basin National by a wide passage spanned by a draw-bridge is a large dry-dock with six berths, three of which are for vessels of the largest class. This, with a small floating dock and the Basin de Carenage, adjacent to the old port, where sailing vessels are careened by the old method for purposes of calking and sheathing, constitute the present repairing facilities of the port.

All these institutions are owned and managed by an incorporate company known as the Compagnie des Docks et Entrepôts, and their charges are considered excessive. Sailing vessels occupying the dry-docks are charged 16 cents per ton for the first day, and 8 cents per ton per day thereafter. Steamers are charged in proportion to their motive power, the rate being 80 cents per unit of horse-power for the first day and 40 cents per horse-power daily thereafter. Sailing ships having over 1,000 tons register receive a discount of 50 per cent. for all tonnage above 1,000 and under 1,500 tons, and 75 per cent. on all above the latter figure. Steamers receive proportionate discounts above 250 and 400 horse-powers respectively. This monopoly has inspired the organization of a rival company, which has just obtained a concession to construct a ship railway in a small cove marked on the chart as the Basin du Pharo, which is admirably adapted to the purpose. Proposals have been invited from New York for the necessary machinery, and work upon it will be immediately commenced.

The regulations of the port are exceedingly minute and strict in all that relates to protection from danger of fire. The docks and warehouses are entirely of stone, and the sheds, being of the same material and roofed with heavy tiles on iron frame-work, are practically fire-proof. A fire-tug with a powerful steam-pump and hydrants under strong pressure at short intervals along all the wharves provide all necessary facilities for the extinction of

fires. No fire for cooking or other purpose is allowed on board any vessel in the petroleum docks, nor is oily bilge-water allowed to be pumped into the port. Vessels moored in the old port are permitted to have fires for cooking and warming purposes, but are required to employ constantly a special guard furnished by the port authorities on payment of 80 cents per day.

The facilities provided in the port of Marseilles for handling freight form a curious mixture of the old and the new. Stolid, complacent conservatism works side by side with the most recent and highly improved machinery that modern invention has devised. Although nearly a million tons of cereals and oleaginous seeds are landed here yearly, there is nothing in the nature of a grain elevator in Marseilles. Grain ships in the old port discharge their cargoes by hand, the wheat being carried in bags or baskets along planks slung from the rigging and poured upon tarpaulins spread along the wharves, where it is weighed with steelyards which have remained unchanged since the Middle Ages. Copra, pea-nuts, and palm seeds are unloaded in the same way. In the new docks steam and hydraulic cranes which lift a ton at a load are used in discharging grain steamers, but even this is a slow and tedious process for a port like Marseilles in this age of automatic elevators.

On the other hand, there are in use along the new ports 47 fixed hydraulic cranes with a lifting power of 3 tons each, 3 portable steam-winches, 38 windlasses, and a hydraulic derrick of 120 tons power for the handling of heavy machinery. For the loading and discharging of ordinary merchandise these fixtures are ample and effective. The labor of stowing and unloading is done by the guild of stevedores, comprising six thousand members, who earn 98 cents per day's work of ten hours. Notwithstanding the large area and dock space of the old port and the Joliette, they are so crowded that vessels are never moored broadside on, and all operations of loading, discharging, and coaling are conducted from barges and lighters.

Ballast is broken stone, open to free competition, and costs from 15 to 20 cents per ton, according to cleanliness and quality. The stone used is so well adapted for macadamizing that a large vessel is now loading with it as cargo for Philadelphia, where it is to be used as a foundation for pavements.

The construction of the new ports has involved thus far an outlay of 95,000,000 francs, and the total cost when they are complete will be not less than 100,000,000 francs, or $19,300,000. It is doubtful whether any other sea-port can show such extensive and excellent results from a similar expenditure. Cheap labor, abundant and convenient materials of the best quality, and a climate that admits of continuous work throughout the year are the conditions which have favored this achievement. All this is independent of the large investments by the Compagnie des Docks et Entrepôts, a chartered corporation, to which important concessions were made in the basins Lazaret and Arene for the construction of sheds, warehouses, and facilities for railway transfer. The franchises of this company include 2 miles of dock front and fifty acres of wharfage and warehouse property, all intersected by tracks of the Paris, Lyons and Mediterranean Railway.

One of the most striking features of Marseilles to a visitor is the system of drayage, which has prevailed here practically unchanged for hundreds of years. The drays have two wheels, on which are laid two long beams, or sleepers, slightly curved upward, and rigged with a windlass and ropes, which, being drawn over the load and strained tightly, hold the burden in place. The horses are heavy, solid Norman animals, usually stallions, and are geared tandem to the number of four and even five. The harness is a miracle of ponderous strength and durability, each collar having at its top a long, tapering horn, for what purpose I have never found any one able to explain, except that it has been customary time out of mind. Such an equipage, skillfully loaded, carries on two wheels 5 or 6 tons of freight, and although it appears to an American mediæval and awkward, it is probably the best vehicle yet devised for transporting heavy loads through narrow and crowded streets.

The commerce of Marseilles has developed steadily since the opening of the Suez Canal in 1869. Although business received a severe check during the cholera epidemics of 1884 and 1885 it recovered rapidly after the disease had disappeared, and in 1887 the arrivals and departures averaged forty-five per day, with registered capacity of 26,000 tons. The total of the year was 9,500,000 tons register, with 4,600,000 tons of cargo loaded and discharged, valued at $339,372,600, exclusive of precious metals.

Among the principal articles of import for that year were 932,000 tons of grain, 320,000 tons of English coal, 76,000 tons of sugar, 900,000 hectoliters of wine, and 444,000 head of domestic animals.

The sea-going steam-ship fleet belonging to this port includes two hundred and thirty-three vessels of 256,354 tons aggregate register belonging to eleven companies, of which the principal are the Messageries Maritimes, with fifty-seven steamers; the Compagnie Generale Transatlantique, with thirty; Fraissinet & Co., with twenty-four; the Société Generale, with seventeen; and the Compagnie Cyprien Fabre, with thirteen. These and the other lines bring Marseilles into direct and frequent connection with nearly every important port in the world, and the medley of human types and races, as well as the merchandise which encumbers the wharves and fills the warehouses here, can hardly be surpassed in respect to range and variety by any sea-port in Europe or America.

FRANK H. MASON,
Consul.

UNITED STATES CONSULATE,
Marseilles, April 29, 1889.

TRADE AND COMMERCE OF RUSSIA IN 1888.

REPORT BY CONSUL-GENERAL WAY, OF ST. PETERSBURG.

CUSTOMS DUTIES.

The bureau of customs has just published a statement of the movement of Russian commerce for 1888 through the European frontier and from the Caucasus coast of the Black Sea.

Compared with the preceding year the receipts in 1888 showed (in a total of 69,947,422 metallic rubles and 2,239,441 rubles paper currency) an excess of 5,776,955 metallic rubles and 54,286 rubles paper currency. This increase has been derived principally from tea (an excess of 2,000,000), cotton (1,400,000), coal, coke, etc. With the exception of cotton (the importation of which fell from 362,016,000 pounds in 1887 to 248,040,000 pounds in 1888), all other articles mentioned have been imported in larger quantities than last year. As to the decrease in the importation of cotton this year, it is simply due to the fear that a higher tariff would be imposed, which caused a much larger importation of cotton in 1887 than was really required by the Russian industry. During the period 1884–'86 the yearly importation of cotton ranged from 216,000,000 to 252,000,000 pounds.

By converting the amount of metallic rubles into paper currency, and *vice versa*, according to the annual average rate of exchange (but not according to the fixed rate established for the budget), the receipts from duties for the last seven years are as follows:

Year.	Metallic.	Paper.	Year.	Metallic.	Paper.
	Rubles.	*Rubles.*		*Rubles.*	*Rubles.*
1888	79,260,000	134,460,000	1884	66,120,000	104,690,000
1887	64,540,000	115,340,000	1883	66,900,000	108,240,000
1886	60,300,000	113,790,000	1882	65,490,000	103,920,000
1885	64,850,000	102,240,000			

The comparison which follows, indicating the relation between the duties and the value of goods imported, enables us to see the effect of the annual increase in the tariff:

Year.	Articles of food.	Material necessary for industry.	Manufactured articles.	General average.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
1884	36	12	20	20
1885	49	14	27	24
1886	59	16	30	28
1887	75	17	34	29
1888	81	19	31	31

During the last ten years the tariff has been gradually increased by about 250 per cent. on articles of food and 150 per cent. on articles necessary to industry.

RUSSIAN EXPORTS.

The exports for 1888 amounted to 727,147,000 rubles, or $363,573,500 (taking the ruble at 50 cents as the average exchange during 1888), excluding goods exported from the Caucasus and Black Sea. This sum, compared with that of last year, shows an increase of 119,000,000 rubles, or 28 per cent. The amount of exports is divided as follows:

Description.	1888.	1887.
	Rubles.	*Rubles.*
Articles of food	476,661,000	350,640,000
Articles necessary to manufacture	219,188,000	193,262,000
Live stock	12,855,000	11,991,000
Manufactured articles	18,443,000	12,627,000
Total	727,147,000	568,520,000

Without entering into details it will be observed that the exportation of articles of food attained its maximum in the months of September and October, those necessary to manufacture in the month of June, and live stock in the month of August. Apart from cereals the other principal articles of food exported were as follows:

Exports of principal food articles.

Description.	Quantity exported.		Value.	
	1888.	1887.	1888.	1887.
			Rubles.	*Rubles.*
Eggs ..... number	678,000,000	500,500,000	11,600,000	7,900,000
Caviare ..... poods	230,000	186,000	2,400,000	2,000,000
Fish ..... do	455,000	427,000	2,000,000	1,800,000
Refined sugar ..... do	4,229,000	3,582,000	16,400,000	13,900,000
Tobacco in leaves ..... do	135,000	175,000	900,000	1,100,000
Alcohol and spirits	.....	.....	7,800,000	8,800,000
Forest products ..... M feet	122,287,000	94,134,000	38,200,000	27,300,000
Linseed ..... poods	21,475,000	19,780,000	27,500,000	26,900,000
Hempseed ..... do	1,935,000	1,060,000	2,300,000	1,200,000
Oil seeds ..... do	4,757,000	6,531,000	6,500,000	6,500,000
Other oleaginous seed ..... do	1,152,000	775,000	1,300,000	1,100,000
Residue from oil grains ..... do	7,213,000	5,434,000	5,300,000	4,100,000
Flax ..... do	11,268,000	8,550,000	60,700,000	47,600,000
Oakum ..... do	1,844,000	1,841,000	5,700,000	5,400,000
Hemp ..... do	3,296,000	3,837,000	16,800,000	19,400,000
Hides ..... do	238,000	209,000	3,800,000	3,200,000
Leather, not curried ..... do	378,000	534,000	4,400,000	5,500,000
Bones ..... do	1,730,000	2,384,000	1,500,000	1,900,000
Horse-hair ..... do	71,000	89,000	900,000	1,300,000
Bristles ..... do	163,000	156,000	9,200,000	7,200,000
Birds' feathers ..... do	106,000	108,000	1,500,000	1,400,000
Tallow ..... do	187,000	218,000	900,000	900,000
Wool (ordinary) ..... do	707,000	1,013,000	7,200,000	8,800,000

Exports of principal food articles — Continued.

Description.	Quantity exported.		Value.	
	1888.	1887.	1888.	1887.
			Rubles.	*Rubles.*
Wool (merino) ..... poods...	365,000	575,000	4,400,000	5,800,000
Wool (camels') ..... do.....	121,000	172,000	1,000,000	900,000
Platinum ..... do.....	229,000	310,000	1,200,000	1,500,000
Naphtha products ..... do.....	.....	.....	7,800,000	4,400,000
Game ..... number...	2,760,000	2,950,000	2,800,000	2,900,000
Horned cattle	.....	.....	1,500,000	3,100,000
Hogs	.....	.....	1,900,000	1,600,000
Sheep	.....	.....	980,000	1,300,000
Horses ..... number...	41,000	21,000	4,600,000	2,600,000
Cordage ..... poods..	191,000	203,000	1,100,000	1,100,000
Linen and dress apparel	.....	.....	6,500,000	1,700,000

The exports have increased 36 per cent. for articles of food, 13 per cent. for material necessary to manufactures, 7 per cent. for live stock, and 46 per cent. for manufactured articles.

IMPORTS.

Far from following the increase in exports, the imports have remained almost stationary in 1888. The value of goods imported from abroad amounted to 333,239,000 rubles for 1887 and 332,293,000 rubles for 1888. The following table shows in what proportion the imports have gradually diminished since the year 1884:

Year.	Articles of food.	Articles necessary to manufactures and live stock.	Manufactured articles.	Total.
	Metallic rubles.	*Metallic rubles.*	*Metallic rubles.*	*Metallic rubles.*
1884	80,100,000	167,700,000	60,400,000	308,200,000
1885	52,600,000	139,700,000	46,300,000	238,600,000
1886	53,900,000	135,200,000	43,800,000	232,900,000
1887	28,100,000	125,900,000	32,400,000	186,400,000
1888	31,200,000	129,400,000	36,700,000	197,300,000

The principal articles of import are tea and cotton, as follows:

Year.	Tea.		Cotton.*
	Poods.	*Rubles.*	*Poods.*
1884	2,105,000	81,173,000	7,413,000
1885	1,765,000	56,411,000	7,606,000
1886	2,132,000	67,218,000	8,360,000
1887	2,063,000	46,307,000	11,321,000
1888	1,993,000	34,240,000	8,375,000

* Comprising cotton imported via Finland and Orenburg.

The other principal articles of import are as follows:

Articles.	Quantity.		Value.	
	1888.	1887.	1888.	1887.
	Poods.	*Poods.*	*Rubles.*	*Rubles.*
Grape wine	.....	.....	7,400,000	7,500,000
Salted herrings	4,618,000	5,146,000	6,100,000	6,700,000
Coffee	389,000	318,000	5,200,000	4,100,000
Fruit and berries	1,234,000	1,374,000	2,800,000	3,400,000
Tobacco	55,000	72,000	2,400,000	3,800,000
Pepper	137,000	145,000	1,500,000	1,400,000
Dry fruits and berries	194,000	157,000	900,000	840,000
Walnuts and nuts	326,000	237,000	800,000	660,000
Wool	786,000	502,000	24,600,000	17,500,000
Colors and coloring material	3,499,000	3,215,000	15,200,000	13,000,000
Coal and coke	106,003,000	98,854,000	13,100,000	11,300,000
Silk	42,000	30,000	11,200,000	7,900,000
Cotton thread	267,000	222,000	10,200,000	9,800,000
Olive-oil	596,000	691,000	7,000,000	8,100,000
Hides	593,000	271,000	6,000,000	4,800,000
Divers plants	1,747,000	1,953,000	5,000,000	4,900,000
Skins	18,000	18,000	4,200,000	3,500,000
Iron	2,132,000	1,773,000	3,800,000	3,200,000
Sheet-iron	1,371,000	1,164,000	3,600,000	2,800,000
Gum, rubber, and gutta-percha	206,000	196,000	3,300,000	2,300,000
Forest products	.....	.....	3,000,000	2,400,000
Chemical products	135,000	145,000	2,900,000	3,700,000
Cast-iron in bars, etc	4,548,000	8,823,000	2,500,000	5,600,000
Caustic soda	1,130,000	1,069,000	2,300,000	2,400,000
Lead	1,017,000	935,000	2,300,000	2,000,000
Tin	139,000	109,000	2,100,000	1,100,000
Jute	481,000	394,000	1,900,000	1,400,000
Steel	452,000	465,000	1,700,000	1,500,000
Vegetable oils	260,000	175,000	1,300,000	970,000
Resin	1,100,000	1,048,000	1,200,000	1,200,000
Sulphur	1,363,000	900,000	1,100,000	750,000
Muriatic acid	508,000	482,000	1,000,000	1,050,000
Potash	669,000	753,000	980,000	1,080,000
Hops	38,000	34,000	960,000	710,000
Divers machines	1,678,000	1,393,000	16,400,000	13,500,000
Articles of steel	1,252,000	1,090,000	11,400,000	9,800,000
Agricultural machines	506,000	349,000	2,600,000	1,700,000
Clocks	.....	.....	2,400,000	1,900,000
Woolens	.....	.....	2,300,000	2,700,000
Flax articles	202,000	193,000	1,600,000	2,200,000
Printings	56,000	53,000	1,600,000	1,600,000
Cottonades	23,000	31,000	1,500,000	1,900,000
Silks	4,000	4,000	1,400,000	1,400,000
Glass-ware	.....	.....	1,300,000	1,700,000
Paper articles	92,000	84,000	1,100,000	1,200,000
Copper and brass articles	42,000	45,000	900,000	1,100,000
Joinery	.....	.....	910,000	1,400,000
Musical instruments	.....	.....	840,000	780,000
Linen	2,000	4,000	590,000	1,080,000

IMPORTS AND EXPORTS BY COUNTRIES.

The movement of Russian commerce (by European frontiers not including the Caucasian coast of the Black Sea) with the different countries in 1888 was as follows:

Countries.	Imports.	Exports.
	Rubles.	*Rubles.*
Norway and Sweden	4,717,000	16,706,000
Denmark	2,144,000	12,268,000
Germany	122,293,000	181,551,000
Netherlands	4,551,000	52,856,000
Belgium	6,456,000	31,333,000
Great Britain	96,005,000	278,586,000
France	13,212,000	52,813,000
Italy	6,632,000	26,721,000
Austria-Hungary	14,577,000	23,479,000
Greece	733,000	8,754,000
Turkey	4,788,000	17,427,000
Roumania	1,497,000	5,299,000
Other countries	54,688,000	19,354,000

NAVIGATION.

During the year 1888 13,936 vessels, with a tonnage of 4,086,750 tons, entered the Russian European ports (one Russian ton is equal to 1,965½ kilograms), while 13,791 vessels, with a tonnage of 4,049,536 tons, left the said ports.

The Russian flag is only represented by 1,586 vessels, of 300,783 tons, as having entered and 1,445 vessels, of 276,441 tons, departed.

The number of foreign vessels arriving with freight is reduced to 4,217, of 1,211,140 tons, while 11,095 vessels, of 3,421,607 tons, left the ports with freight.

The movement of navigation is divided as follows, according to the different seas:

SEA-GOING VESSELS.

Ports.	Arrivals.		Departures.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
White Sea	688	98,846	676	98,373
Baltic	6,966	1,633,250	6,886	1,616,199
Black Sea and Sea of Azoff	4,921	1,974,103	4,878	1,970,903
Total	12,575	3,706,199	12,440	3,685,475

COASTING-TRADE VESSELS.

White Sea	724	39,402	744	39,019
Baltic	4,087	271,750	4,559	300,591
Black Sea and Sea of Azoff	18,467	2,204,403	17,992	2,191,787
Total	23,278	2,515,555	19,295	2,231,397

FORESTS.

Notwithstanding the enormous area of forests (particularly in the northern zone), the Government have realized the fact that the elimination of trees produces atmospheric changes and converts what were once fertile plains into deserts. Already it is observed that the Caspian Sea is receding, owing to the destruction of the forests at the head of the great rivers which flow into it, while it is believed that from the same causes the Sea of Aral (fast sinking) will disappear in a century. Steps are being taken to remedy this, and, if the matter is seriously entertained, much good will be accomplished. But if this is necessary in a wooded country like Russia, how much the more so in the United States, where vast forests are destroyed yearly.

FISHERIES.

The fishing exhibition, just concluded at St. Petersburg, shows not only the interest manifested in the important industry by Government and people, but it also demonstrates the extent of this branch of material wealth as yet undeveloped in the Empire. I do not suppose for a moment that any other nation has such sea and river harvests as are within the reach of Russia. If one takes into consideration the immense rivers, the long line of coasts, the almost undisturbed migration of fish, there is an apparent foundation for the piscatorial statements which read more like romance than truth. Slowly the great desideratum—cheap transportation—will bring this tribute to markets less fortunate, and will prove to be a source of wealth hitherto overlooked to the people, and add greatly to national prosperity.

THE FINANCIAL CONDITION OF RUSSIA.

The administration of Mr. Wischnegradsky has wrought a change in Russian finance totally unexpected by the best friends of the Empire. Despite the hostile criticisms, predictions, and acts of foreign press and foreign bankers he has ended the fiscal year with a large surplus. It has awakened the favorable comments of other nations, and is the subject of a highly complimentary report (fully deserved) from the British minister (Sir Robert Morier) to his Government. The transformation, under all the circumstances, seems marvelous.

For a number of years there had been a steadily increasing deficit. Despite new tariffs and taxes, despite the issue of fiat money, the minister of finance could calculate with certainty upon facing the wrong side of his ledger; but by a prudent, economical course all this is changed. The paper ruble has risen in value from 37½ to 52½ cents within the space of twelve months.

An enormous issue of bonds bearing 5 per cent. interest has been converted into 4 per cent. bonds on the most favorable terms. The subscriptions for the new bonds were largely in excess of any satisfying allotment, and demonstates the fact that not only is it in the power of the minister to convert the entire debt of Russia into a lower interest-bearing issue, but that foreign capitalists are eager to invest in a security which two years ago was the foot-ball of foreign bourses.

The increased duties upon cotton, tea, coffee, and jewelry and the excise upon the augmented output of alcoholing vineries and malt liquors have doubtless aided, but personal knowledge enables one to say that from the Czar down to the humblest bureaucrat the system of economy has been enforced. No one having the interest of this country at heart can but rejoice.

Increased receipts means increased communications, the opening up of new provinces bringing with it wealth to the people, means of education, lower taxation, and general prosperity.

If the national treasury is on a sound financial basis it augurs well for the people in general. This surplus will be expended in promoting the general welfare.

Taking the past year as an example of what the minister of finance could do with a depleted treasury, it is not risking too much to say that ere long the paper ruble will be valued at 75 cents, or its equivalent in gold.

CHARLTON H. WAY,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
St. Petersburg, May 17, 1889.

THE OUTLOOK FOR BIMETALLISM IN EUROPE.

REPORT BY CONSUL MASON, OF MARSEILLES.

One of the clearly defined tendencies of public opinion in Europe—notably so in France, Germany, and England—is seen in the steadily growing sentiment in favor of restoring the bimetallic standard of currency. In the strong and numerous petitions which have been read before the German Reichstag; in the recent resolutions of Mr. Chaplin in the British House of Commons, as well as the frank declaration of Lord Salisbury in favor of an earnest participation by Great Britain in the forthcoming conference at Paris; and in the outspoken attitude of such serious and influential French journals as Le Moniteur des Interêts Matériels, and the Moniteur des Syndicats Agricoles, may be recognized the outward manifestations of this new faith and purpose.

Sixteen years' experience of monometallism has entailed an industrial and agricultural situation in western Europe which demands a remedy. How much of the present depression in these interests has been really due to the practical demonetization of silver is a question upon which there is naturally a wide divergence of opinion, but the belief that the effect of that policy has been vitally prejudicial is so rapidly growing that a brief résumé of the arguments which are advanced to sustain that theory may, perhaps, come fairly within the province of a consular report.

The first fact usually cited is that the decline in agriculture and industrial prosperity began soon after the demonetization of silver by Germany in 1873 and the subsequent partial concurrence in that policy by the Latin Union. It has been generally asserted by economists hitherto that this depression had

been mainly due to two other causes, viz, the increased production of food products in new and fertile countries, and the cheapening of transportation by railways and steam navigation, which tends more and more to throw the whole product of the world into a common and nearly uniform market. These two causes, it is now argued, could not have produced the results which are so obvious had they not been aided, in an important degree, by a monetary policy which has enormously favored the competitive power of India, China, and the other countries which maintain the silver standard. Against cheap transportation and the development of new and fertile lands there is, of course, nothing to be said; it is the monetary policy which, if it be indeed fallacious, is susceptible of remedy.

The monetary system of France, as established by the law of 7th Germinal, year IX (March 29th, 1801), fixed the relative values of silver and gold at 15½ to 1, and under this double standard of currency French agriculture and manufactures prospered for more than seventy years. In 1865 Belgium, Switzerland, and Italy, and some time later Greece, forming what is known as the Latin Union, adopted the double standard of France. This continued until 1873, when Germany, which had previously maintained silver as its medium, demonetized that metal and adopted the single standard of gold. There was a danger that under this system Germany would absorb unduly the gold of neighboring countries, and to resist this tendency the Latin Union, in 1874, suspended the coinage of silver.

The consequences were as natural as they are well known. The long-established ratio of 15½ to 1 between silver and gold was violently broken, and the values of the two metals have since drifted farther apart. The depreciation of silver in France has been equivalent to nearly or quite 27 per cent. The 5-franc piece of this country has to-day a bullion value of only 3.60 francs. It is, as the Commercial and Maritime Journal says, "merely a metallic assignat." The loss to France by the depreciation of its silver in circulation is estimated at a milliard and a half francs. But this is not all, nor the worst of it. There remains the pernicious effect of this monetary perturbation upon the export trade. Upon this point let us quote the official organ of the Marseilles chamber of commerce:

> But if silver has lost so largely from its value in Europe, it is not so in India and China, where it is eagerly sought for in exchange for agricultural and manufactured products. In order to obtain our silver, which she needs, Asia has only to send us her merchandise, and naturally she sends it to us as copiously as possible. Now, the present depreciation of silver in Europe (or, in other words, the appreciation of gold) amounts to 27 per cent., and it constitutes a premium of 27 per cent. on Asiatic exportation and a disadvantage of an equal percentage on our export commerce to Asia. It should be remembered, moreover, that the peoples with whom we are under this detestable disadvantage comprise seven-twelfths of the inhabitants of the globe. The demonetization of silver which has taken place in the countries of the Latin Union thus constitutes for India and the other countries with the monometallic silver standard a protective duty against importations from Europe. European products sold in Asia are paid for in silver, and, since silver now loses 27 per cent., our exporters are obliged to increase by that proportion their export prices in order to realize the same profits that they obtain upon goods sold at home. But at these exaggerated prices they find no purchasers, and the double

result of the monetary revolution accomplished in 1873 has been to flood our markets with foreign products at prices which defy home competition. Wheat, cotton, oleaginous grains, sugar, wool, raw silks, corn, and manufactured goods from Asia, and wool, tallow, and hides from South America, are poured in upon us in ever increasing quantities, while their markets are practically closed to us by this fatal disadvantage of exchange.

It is therefore of the first importance to re-establish the equilibrium arbitrarily broken in the monetary circulation, and to end the trouble which paralyzes commercial relations and overrides import tariffs by suppressing the abnormal advantages now enjoyed by the countries whose standard of currency is silver. To do this there should be a general return to the French bimetallic standard as established by the law of the year IX, with a fixed relation between the values of gold and silver. This system was thoroughly and successfully tested for seventy years, and it furnishes the only secure guaranty against the violent and disastrous perturbations caused by the present variations between the values of the precious metals.

This lengthy quotation from a journal of high commercial authority synopsizes fairly the present attitude of the bimetallist commercial party in France, which has gained enormously in numbers and influence during the past two years. The case from the stand-point of the agriculturists is not less strong and urgent. They say, in substance, that "the demonetization of silver, the money of the laboring people, has flooded our home markets with foreign breadstuffs, wool, cattle, cocoons, and other farm products, and thus fatally reduced the value of our crops without cheapening, in any corresponding degree, the cost of rents, labor, or clothing, and without lifting a penny from the burdens of taxation under which we are staggering." These men may, perhaps, somewhat exaggerate the effects of monometallism, but, right or wrong, they are earnest and nearly unanimous in their belief, and nothing will satisfy them but a return to the double monetary standard of early and more prosperous times.

Nor is France alone in these opinions. As has been already intimated in this report, the signs of a changing sentiment in Germany and England are not less striking. As early as 1886 eight hundred and forty agricultural societies had appealed to the Berlin Reichstag in favor of a remonetization of silver, and during the early part of the session of the present year this appeal was seconded by a powerful contingent of landed proprietors, who demanded that the Government, in order to check the enormous imports from India, should associate itself with Great Britain in favor of the remonetization of silver.

Turning to England, we find the House of Commons a few days ago discussing deliberately the motion of Mr. Chaplin (himself a leading member of the monetary commission), in which it was declared that—

The artificial disparity of values between gold and silver has aggravated seriously the difficulties of commerce between England and the countries which maintain a silver circulation. The House believes that this disparity of values has been caused, principally, by the abandonment of the double standard by certain European countries wherein it had been maintained prior to 1873. It sees with regret the long crisis to which agriculture and industry have been exposed, and to which these monetary perturbations have largely contributed. It also engages Her Majesty's Government to consult the principal commercial nations, such as Germany and the United States, and the countries of the Latin Union in view of a conference

which may be charged to examine whether there is not good reason to re-establish, and to what point can be re-established, the double monetary standard in deference to the interests of all concerned.

Lord Dufferin states that the low and fluctuating value of silver is disastrous to the treasury of India, and declares himself in favor of immediate remonetization, while Mr. Samuel Smith, a well-known English economist, even goes so far as to attribute to demonetization and its economic consequences a large influence in the agrarian troubles of Ireland, the discontent of that country, the protectionist reaction of continental Europe, and the spread of socialism and other disorders incident to poverty and enforced idleness.

The expressions which one hears frequently among practical business men are not less pronounced and conclusive in respect to the main question of remonetization. Said one of these, recently, in conversation with the writer:

It is useless to cling longer to our ideals. I am by education and conviction a monometallist and free-trader. A single uniform gold standard and an absolutely free exchange of products between all commercial nations would be, in my judgment, the best and natural condition. But the world has not come to that yet, and, as things are going, it is doubtful if it ever will — not, at least, for a long time to come. The resources and needs of various countries differ essentially, and to meet these varying circumstances some countries cling to protection, others maintain the silver standard, and the brunt of the battle falls upon the advanced nations which have adopted free-trade and the gold standard in the hope that the others would follow suit. But they are not following suit; every government is doing its utmost to protect its home interests and augment its own revenues, to increase its exports and restrict its imports. The time has come in France to put aside theories and work for practicable results. We can not stand this fatal disadvantage in competition with the silver circulating countries of Asia and South America. I am for a return to the double standard, and the sooner the better.

In view of all that one reads and hears in the discussion of this question it would seem apparent that the monetary conference which is to assemble at Paris in September will meet under circumstances far more promising to the interests of bimetallism than those which surrounded the conference of 1881.

FRANK H. MASON,
Consul.

UNITED STATES CONSULATE,
Marseilles, July 8, 1889.

THE TURFA MINES OF BRAZIL.

REPORT BY CONSUL BURKE, OF BAHIA.

I have the honor to submit the following relative to what is said to be a valuable discovery in this province of Bahia, a discovery which, if it proves to be what is claimed for it by the company controlling it, will very materially affect the interests of those producing and manufacturing similar articles in the United States for South American markets. This newly discovered brazolina, as it is called, can be obtained in sufficient quantities, if reports

concerning the quantity believed to exist where found be correct, to supply not Brazil alone, but all South America. This newly-discovered product of the earth, as it is found, is called turfa.

The mines where it is found are called the mines of Maratiú. Maratiú is a small village about 60 miles south of this city, and, as far as I can learn, some 20 to 25 miles from the sea-coast.

The existence of the turfa at this place (I am told it has the appearance of cork, especially that part near the surface,) was known some years ago. But not till three or four years since was it known positively to contain the main ingredient now extracted from it by distillation, viz, petroleum, or, as here called, brazolina or *Petroleo nacionæ*, besides paraffine, gasoline, and lubricating oils, resulting from the process. It is said an English clergyman first discovered it, whereupon Mr. E. P. Wilson, then an English merchant of this city, obtained a concession from the Government for developing it. He shipped large quantities of the turfa to England, expecting to manufacture gas from it, but for some reason it did not prove a success, though considerable money was swallowed up in the undertaking. In 1884, the concession being about to lapse, Wilson had it renewed. After its renewal, or about the time thereof, John Cameron Grant, who had been in this country some little time, on his return to England took some of the turfa with him, for the purpose of having it subjected to a chemical analysis. The results of the analysis showed that it contained an oil apparently not inferior to the kerosene oil of the United States. Immediately Mr. Grant formed a company and purchased from Mr. Wilson the concession. With Mr. Grant as general manager, it is stated, work was commenced at the mines with a capital of £180,000. A correspondent of one of the journals states that about 2,000 tons of machinery have already been set up and in working order, including thirty-five steam-boilers in operation of from 25 to 50 horse-power, with machinery also for manufacturing about 4 tons of ice daily for the service. Some 1,500 tons more of machinery are reported on the way from England. From four hundred to four hundred and fifty hands are now employed. Tram-ways are constructed from the central building to different parts of the mines where the work is carried on. The correspondent represents it as but the beginning of a great enterprise.

The value of the discovery, what is being done at the mines, and what is expected to be done there were only recently brought to the notice of the public by leading articles in some of the newspapers in this city, through an effort, as is stated, on the part of the company to secure an exemption for sixty years of the 5 per cent. tax levied by the provincial government on the profits the company would realize. I am informed that this is the per cent. of tax every company, house, or firm doing business in the province is required to pay annually to the provincial government on the profits of business. The press, as is usually the case where its freedom is untrammeled, lays claim to opening the eyes of the people to this matter of the turfa company regarding an exemption from the 5 per cent. tax, enabling the people

to have a better idea of the untold wealth at the very gate of this city and to calculate the great loss, as one of the journals expressed it, which would result to the provincial government should the officials accede to the request of the company for a sixty years' exemption.

The Journal de Noticias, a prominent daily of this city, in an article recently published on the subject, estimates the consumption of kerosene in Brazil at 1,150,000 boxes annually. Calculating the value of each box at 7 milreis, the total value of the quantity imported amounts to about 8,050,000 milreis, or half that amount in dollars of the United States. This statement is from the same source (Journal de Noticias).

The above estimate was made by this journal to show the approximate loss the provincial Government would sustain annually in case of the exemption requested by the turfa company. The provincial duty now collected on every kilogram of kerosene imported being 100 reis (equivalent to 5 cents United States currency), or on one thousand boxes of kerosene, containing two thousand tins, upwards of 2,050 milreis would be lost to the provincial government, besides the loss of duties from non-importation to the general and municipal governments. The total fees, or rather taxes, collected on one thousand boxes of kerosene, including the emancipation tax, are 3,430 milreis.*

The same journal goes on to say that the turfa company will manufacture 50 tons of candles per month, making 112,000 packages, six candles in a package, every package selling for 320 reis, producing 358,400 milreis per month, or to the value of 4,300,800 milreis per year, which would be a loss to the province and the Government equal to the import duty now received should the company secure the exemption.

Similar estimates and showings are made on gasoline and lubricating oils. Whether the price of these articles would be less to the purchaser than the imported article is now, by reason ot their manufacture by the turfa company, exemption or no exemption, the journal above does not, I believe, state. But, in any event, if the enterprise ot this turfa company should prove a success it will be likely to cut off nearly all the trade in kerosene, candles, and lubricating oils which the United States now has with Brazil, and, it may be, interfere largely in these articles with our trade in the countries south of Brazil.

There are said to be thus far three qualities of turfa found, the quality, both in the quantity of oil extracted and in the color, varying with the depth. Boring, up to four or five months back, I am told, had been made to the depth of 100 feet, and, it is said, the turfa was found in veins.

The quality called No. 1 is of a yellow color, from which, it is reported, from 50 to 100 gallons of oil to the ton is extracted; No. 2 is of a light blue, and No. 3 nearly black.

The petroleum, or kerosene, or brazoline has already been put upon the market. It is said to be equal to the imported kerosene in every particular,

* 1 milreis = 54.6 cents.

while the candles, also being sold, are said to be superior to the imported candles, in that the candle lasts longer in burning and gives less smoke.

The lubricating oil from the turfa is said to be much superior for machinery to vegetable oils.

Any further information I may receive later on the subject I will forward to the Department.

DAVID N. BURKE,
Consul.

UNITED STATES CONSULATE,
Bahia, June 13, 1889.

COMMERCE AND PRODUCTS OF SUMATRA.

REPORT BY VICE-CONSUL EILBRACHT, OF PADANG.

IMPORTS.

Besides petroleum nothing worth stating has been imported from the United States to Padang. The consumption of petroleum has been increasing on this coast. The markets for English, Dutch, and other import goods would not give much satisfaction to importers, compared to former years. According to my feeling this has to be attributed to the increased number of commercial firms at this place who are competing sharply. By their trying to replace the small commission by an increased amount of business the market has frequently been overstocked and buyers could get concessions on prices. That this also destroyed the interests of the manufacturers in Europe is easily to be understood.

Numerous letters from the United States, principally in connection with the machinery trade, have been received at this consulate. The number of Europeans on this coast, however, is so small that there is no market here for American machinery or similar branches of business.

EXPORTS.

The period under review (1888), generally speaking, has been a pretty satisfactory one for export firms. Prices of the greater part of products advanced gradually, so that regular purchasers on the market could find a sufficiently good outlet for their stocks, and therefore have been inclined to make larger shipments. Producers as a rule were coming off more liberally than in former years. The United States got their customary share in Padang business. However, it is a pity that American buyers seem so little acquainted with Padang products, so that business transacted between the United States and this colony is in the hands of a few regular American buyers only. If some more United States firms could decide to open business relations with Padang, I suppose a more lively and prosperous trade between both countries could be created. Whilst in previous years shipments to America took place by sailing vessels only, coffees and other heavy or dear goods, such as nutmegs and

gum damar, are occasionally shipped now by steamers, with transshipment in Holland. The high rates of freight for goods by steamer greatly impede a development of this mode of shipping. Exchange during the past year has been unfavorable for exporters.

Coffee.—It is remarkable that while the production of private plantations is increasing the quantity of Government coffee is decreasing rapidly. Official reports attribute the latter to the very bad weather, by which many blossoms are falling from the trees, which I am inclined to accept, but partly only, for as Government and private plantations are in the same districts these latter ones ought to sustain the same influences, and nevertheless the production of private estates is increasing. I suppose that the evil is rather to be looked for in the forced cultivation to which the natives are subjected. They get 15 francs per picul from the Government for prime quality, which the latter resells at prices from 50 to 60 francs. If the Government would decide to offer a better compensation to the natives, or make free the cultivation, I have no doubt that better results than hitherto; that is, larger production, could be obtained. Prices of coffee were rising nearly all the year round, and a temporary stand-still or downward movement was followed by a new advance.

Nutmegs.—The greater part of the production of 1888 has been taken for American owners, and only trifling lots have been shipped to Europe. A large stock still in shell is not yet ready for shipment, and will be forwarded in 1889. High prices have been paid during the period under review.

Mace.—Mace left a good profit to exporters. The quantities obtainable proved too small for the requirements of buyers, and prices gradually advanced from 90 to 120 francs in the beginning of 1888 to 125 and 145 francs towards the end of the year.

Cassia.—The demand regulated itself according to the shipping room. Generally when sailing vessels for New York were nearly due an improved inquiry for the article could be observed. No sailing vessels for Holland have loaded here, and, as the freight by France is too dear for an article such as cassia, not a single lot has been shipped to Europe during last year whilst all the production found its way to the United States.

India rubber, getah gietan, getah soesoe (Borneo rubber).—In the beginning of the year the demand has been very satisfactory, principally for the better grades of rubber. The winter in the United States having been a very mild one the manufactories of rubber boots did not want much rubber, and, as they use the greater part of the production, prices here slackened towards the end of the year.

Gutta-percha.—Business done has been very small as far as concerns purchases for American account. The reason may be that prime quality, which only is fit for the American markets, has been scarce. The bulk of second and inferior descriptions has been shipped to the Straits.

Gum damar.—The market has been an irregular one, and prices showed differences of from 4 to 6 francs per picul. In the first months of the year prices have been satisfactory for exporters, and a large business, principally

for French account, has been transacted. At a certain period, however, European markets were overstocked and holders could not get rid of their stocks even at a considerable reduction on the prices. Later on, when European stocks diminished, numerous orders at sufficient prices reached us, but it seemed that the quantity shipped had again been too large for the consumption, and, after a short time of rise, prices rapidly dropped again. America has had the usual share in the quantity exported, but the American orders have been very limited. I suppose that the quality of Padang gum damar is not sufficiently known in the States, and therefore often confounded with the Batavia quality. This is a pity, for Padang damar, prime quality, I may state, is fully up to the mark of the best Batavia damar obtainable, and at equal prices. French buyers, who take a great interest in Padang damar, prefer our prime quality to Batavia.

Gum benjamin.—I have not heard of a shipment to the United States worth mentioning.

Black pepper.—This is an article which does not arrive regularly, and which is nearly exclusively shipped to the United States.

Rattans.—Rattans enjoyed little attention in the beginning of 1888, but towards the middle of the year a sudden demand set in and prices advanced by nearly 50 per cent., at which rates the year closed. The impossibility to find shipping room for a sufficient quantity checked a liberal development of the exports. In fact, a freight of 60 francs per 1,000 kilograms to Holland by steamer is very dear for such an article as rattan, and even at that rate shipping room could only be secured at intervals. Shipping opportunity by steamers as dunnage has been contracted for by a few firms. America received its supplies by sailing vessels, partly as cargo and partly as dunnage.

BUSINESS FIRMS IN PADANG.

Commercial.—Boon, Tritveld & Co., C. Boon and H. Schluter, C. J. van Bueren & Co., Commanditaire Handelverseniging, M. Stibbe & Co.; Coomans & Van Haastert, A. H. Eilbracht, Gebroeders Veth, T. F. van Leemoen & Co., Van Houten, Steffan & Co., W. B. Pearson, L. E. Tels & Co.

Banking.—Java Bank, agency Dutch Trading Company, Chartered Bank of India, Australia, and China, Chartered Mercantile Bank of India, London, and China, Hong-Kong and Shanghai Banking Corporation, New Oriental Bank Corporation, limited.

ALFRED H. EILBRACHT,
Vice-Consul.

UNITED STATES CONSULATE,
Padang, April 24, 1889.

WOOLEN TRADE OF THE DISTRICT OF ROUEN.

REPORT BY CONSUL WILLIAMS.

Commerce and manufactures in general, and that of spinning and weaving wool in particular, seem to be looking up again. The confidence in the continuance of this revival of trade has not been so great for many years as at present, and is chiefly attributable to the following causes: The opening of the Exposition has met with a success exceeding the most sanguine expectations; the influx of strangers is largely counted upon, and their purchases in the aggregate must be considerable; the prospects thus far in the season are very promising for all grain and forage crops; apple and pear trees are in full and vigorous blossom, while vegetables are well advanced, and insects destructive of vegetation have not put in an appearance.

At Elbeuf the manufacture of fancy summer cloth has been active during the month of April. It is noticed that there is a marked inclination to return to carded stuffs for winter goods. Combed goods are still in great demand, but less so than last year. Black and plain colored cloths, as well as those for state use, are in regular demand. The shipments did not exceed 209,206 kilograms during the month of April, on account of the slackening of manufacture in consequence of the premature cold weather of the early season. Considerable export orders have been received, however.

At Reims cashmeres and merinoes have met with a ready sale for the English market. The stock is quite exhausted. For fancy goods there is a great demand. Spinning, both combed and carded, is very active, and the advance is quite marked upon combed. In short, the trade of the place prospers.

At Fourmies but little business has been done in combed, on account of the reluctance to make a figure extending to future distant delivery. This state may remain unchanged for some time, as the spinners have orders which it will take much time to fill. The market for fashionable combed goods is active, and the demand sufficient to keep the mills busy throughout the season. "Les blousses," the short and broken filaments from the combing-machine, are sought after at no perceptible variation of price. Yarn is in demand, and there is no stock on hand. Prices are as follows: Cannettes mécaniques (cups or small bobbins put into the shuttles, and therefore bound tighter than the ordinary bobbins), 63 millimeters (63,000 meters per kilogram), 7.10 francs per kilogram; 70 millimeters, 7.40 to 7.55 francs per kilogram; 77 millimeters, 7.75 to 7.85 francs; 84 millimeters, 8.25 to 8.40 francs; 91 millimeters, 8.75 to 9 francs; 98 millimeters, 9.45 to 9.60 francs. The numbers above 98 have recently been in demand. Hand-made warp, 56 millimeters, 7.45 to 7.60 francs. Machine-made warp, 52 millimeters, 7.45 to 7.60 francs; most especial quality for warp, 60 millimeters, 8 to 8.25 francs; warp, 56 millimeters, 8.75 to 9 francs. The demand for fabrics is

active, and prices have advanced, but have not yet reached the point which the above quotations for yarn would warrant.

From Mazamet, during the month of April last, 42,051 kilograms of cloth and 685,776 kilograms of worsted goods were shipped. During the corresponding month of last year the shipments were 36,575 kilograms of cloth and 859,585 kilograms of worsted goods. The following is a comparative table of the woolen trade of the five principal centers in the north of France during the months of April, 1888 and 1889:

Centers.	Combed wool.		Yarn.	
	1888.	1889.	1888.	1889.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
Reims	700,337	740,171	32,462	60,746
Roubaix	1,511,604	2,290,379	328,969	459,459
Tourcoing	1,372,815	1,695,554	273,237	321,135
Amiens	127,149	75,643	85,960	70,068
Fourmies	230,238	171,702	344,569	407,530
Total	3,912,143	5,002,449	1,085,197	1,318,938

The following table indicates the variations in the exports and imports of France during the first quarter of the years 1887–'89.

Articles.	1889.	1888.	1887.
Imports:	*Francs.*	*Francs.*	*Francs.*
Wool	116,669,000	100,531,000	90,226,000
Yarn	3,284,000	3,328,000	2,575,000
Woolen fabrics	13,118,000	14,409,000	14,255,000
Exports:			
Wool	36,494,000	28,126,000	25,256,000
Woolen yarn	12,610,000	7,288,000	7,776,000
Woolen fabrics	86,548,000	98,483,000	85,826,000

CHAS. P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, May 20, 1889.

NORWEGIAN COD FISHERIES.

REPORT BY VICE-CONSUL ISDAHL, OF BERGEN.

The principal cod fishing, which takes place in the district of Lofoten from middle of January to middle of April, finished with a result of 17,000,000 fish, 20,300 barrels of liver, 17,000 barrels of spawn, and 11,100 barrels of crude steam-rendered oil. The gross value of the catch is estimated at $1,554,500. The returns of last years' catch were 26,000,000 fish, 32,700 barrels of liver, 33,600 barrels of spawn, and 13,800 barrels of crude steam-rendered oil. The gross value of the same was estimated to be $1,600,000.

In the year 1887 the fishing in Lofoten yielded 29,700,000 cod-fish; in 1886, 31,000,000; and in 1885, 26,600,000; this season's catch is thus the smallest for a number of years. The large deficiency is partly to be attributed to roughness of the weather during the fishing season, and partly to scarcity of fish present on the fishing grounds. It was repeatedly stated by the inspectorate of Lofoten as a reason for the poor catch, that when the weather permitted fishing the fish remained in deep sea and did not run up on the banks, on account of a low temperature of the sea. This unusual phenomenon lasted during the whole season.

The fish were this season of smaller size than last year; the fatness of the liver was, however, about the same, viz, from 250 to 350 fish per hectoliter of liver (hectoliter = 2.838 bushels). At the end of the season the liver of the fish is always leaner than in the beginning. The prices paid for the fish were very high, and began with 20 kroners (kroner = 26.8 cents) per 100 fish early in the season, and advanced to 30 kroners later on. The average gross profit for each fisherman is estimated at $51, against $50 in 1888. The profit for the fishermen was, however, most unevenly divided, on account of the catch being good at some places while very poor at others. Many of the fishermen had thus to return to their homes without profit at all. The number of fishermen that participated in the catch is stated to have been 30,080. The highest number of boats present was 7,043, and of vessels buying fish 644.

The returns of the catches taking place in the adjoining districts have not yet been issued. They are, however, all of less importance, as the fishing in those districts was constantly interrupted by stormy weather.

In the southern fishing district of Sondmore this season's catch was successful. The returns thereof were 5,000,000 fish, 13,000 barrels of liver, 9,400 barrels of spawn, and 3,900 barrels crude steam-rendered oil. In the neighboring district of Romsdal the fishing yielded 2,000,000 cod-fish.

In the Finmarken district, where the fishing has begun anew, the yield to date has been about 4,000,000. The latter district is, next to Lofoten, the most important, but the fishing there is also more treacherous than in any other district, and therefore not to be relied upon. The actual prospects for a continuance of the fishing in Finmarken are good.

J. C. ISDAHL, JR.,
Vice-Consul.

UNITED STATES CONSULATE,
Bergen, May 1, 1889.

TRADE OF ZANTE.

REPORT BY CONSULAR AGENT CROWE.

The past three months have been remarkable for the unusually stormy weather experienced, and this has doubtless affected trade somewhat, but one of the principal causes of dullness has been the want of demand for our staple production from almost all the markets of consumption.

EXPORTS.

Currants.—In my report at the close of the year I had occasion to remark on the unfavorable condition of the currant trade, and the position instead of improving has, unfortunately, got worse. Out of a total crop of at least 155,000 tons only 122,000 tons have been exported, as follows:

Countries.	1889.	1888.
	Tons.	*Tons.*
United Kingdom	56,797	58,397
United States	12,710	12,067
Canada	1,630	1,184
Germany, Holland, and Belgium	23,332	12,196
France	23,399	29,040
Trieste (principally for southern Germany)	2,298	1,995
Australia	1,111	1,049
Southern Russia	582	124
Total	121,859	116,052

It will be remarked that the only countries which have taken a considerably increased quantity are those of the northern continent of Europe, and this more especially applies to Germany and Holland, as the very heavy duty imposed of late in Belgium has almost prohibited the use of this article. The United States, which it was hoped would import much more than in the preceding year, has not responded of late to the low offers from this side. It is believed that trade generally with the more western states fell off very considerably during the winter, and thus less currants from the earlier imports were disposed of than anticipated. France is now said to be in demand, and it is to be hoped will make up for deficiencies in the earlier stages; but the prices offered are very low, say, about 22 francs, free on board, per 100 kilograms, and as there are at least 30,000 tons on this side to be disposed of between this and next August, principally composed of inferior qualities, only fit for wine making or distillation, the prospect for all concerned is far from reassuring.

Olive-oil.—As mentioned in my last quarterly report the crop proved very small, and will mostly be consumed for local purposes.

Potteries.—The clay here is peculiarly adapted for making porous water jars, which are exported in thousands to the mainland; likewise tiles and bricks, with which many vessels discharging grain from the Black Sea ports

frequently ballast on their return voyage, and which are then sold in Constantinople and other places in the Levant.

Green oil.—Green oil is extracted from the stone of the olive. There are two mills here which appear to thrive. The liquid they prepare is partly used by local soap-boilers, and partly exported in small quantities to various places.

Wine.—The wine crop was very abundant and good, but it is mostly consumed on the spot. For 4 to 6 cents a pint a very fair table wine is obtainable, increasing in cost to 8 and 10 cents in proportion to its age and alcoholic strength, but, strange to say, though strong, it does not bear transportation well. It is totally different to the production of the Sister Isles, especially of Ithaca, Santa Maura, and Corfu, which mostly yield a very dark wine greatly in favor in France for coloring purposes.

IMPORTS.

Grain.—Several cargoes are annually imported, mostly from the Black Sea, as the local production only suffices for three or four months.

Fish.—Cod-fish to the amount of 19,325 quintals from Labrador, and 160 tierces of pickled salmon from Newfoundland, arrived by British sailing vessels. The opening prices of the cod-fish were about 21 francs per quintal, but prices declined to about 12 francs per quintal, the dearth of money being very great amongst the currant-growing communities, which are the principal consumers of the article. The salmon also sold below the usual price.

Ground sulphur.—This article continues to be regularly imported from Sicily to sprinkle the vines with, as the oidium has not yet disappeared.

SHIPPING.

The imports are mostly conveyed under the Austro-Hungarian, British, Italian, and Greek flags. The exports (especially currants) are almost entirely made under the British flag for the United States, the United Kingdom, and a considerable portion of shipments to France and the northern continent of Europe, though there is now a regular line of German steamers from Hamburg, and Dutch, Belgian, Italian, and other flags are also at times employed.

During the past year no merchant vessel of the United States called here. The rates of freight were rather higher than usual, owing to the demand from the Black Sea.

EXCHANGE.

The constant and serious fluctuations often render operations impracticable, as there is no knowing from one day to another on what rate to base calculations. The present Government appears very anxious to do away with the forced currency, which is the great hindrance to the advancement of the country.

A. L. CROWE,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Zante, March 31, 1889.

INDUSTRIES OF CORFU.

REPORT BY CONSULAR AGENT WOODLEY.

The importation of all articles for local consumption, in consequence of high duties, extra taxes, and exchange, has been greatly reduced. On the whole, I may state that the commerce and trade of the island of Corfu has sustained lately a severe depression, and this owing, no doubt, to the general commercial crisis on one side and the great competition on the other, which opened other neighboring ports for transshipping goods to Albania and Dalmatia, which operation was formerly carried on almost exclusively in Corfu. In consequence of this depression many of our capitalists and enterprising minds have purposed to lay out their capital in other directions, and consequently the various branches of industry have lately materially advanced and they might in time gain wide proportions.

The following are the industries established in this island, which, although not yet very far advanced, may be considered the commencement of extensive enterprises: Five steam-mills, of 61 horse-power, 12 pairs of stones, valued at $85,000, for making flour, bread, macaroni, and pastes.

One steam establishment of 30 horse-power, which, by chemical process, using the bisulphate of carbon, extracts from the refuse of the kernels and pulps of the olives the pyrene oil used in the soap manufactory attached to the works; value about $45,000

One ice manufactory, by the ammonia process, valued at $6,000, produces 1½ tons of ice daily.

One manufactory producing playing cards of the French and Venetian system; machinery at present worked by hand labor, which will soon be substituted by a gas motor. Above machinery, necessary materials, paper, colors, etc., are imported from Leipsic, London, Paris, and Vienna. Formerly the yearly production amounted to 4,000,000 packs, consumed in Greece, Turkey, and Dalmatia, but at present, in consequence of the Government's monopoly on this article, which is subject to a high tax, the yearly amount is limited to 1,200,000 packs for exclusive consumption in Greece. The Greek Government, having also a monopoly on the cigarette paper granted to the above factory the privilege of importing the cigarette paper, and preparing it according to regulation for the consumption in Greece. About one hundred men, girls, and boys are employed in this factory; value of establishment, about $20,000.

One straw hat manufactory, importing the gray straw from Canton, England, Italy, and Switzerland, which straw is bleached and dyed here, worked by sewing-machine and hydraulic press. This factory employs about eighty persons, men, girls, and boys, working nine months yearly, and produces 60,000 mens' and ladies' hats, chiefly of fine quality, as an inferior quality is imported from Italy ready-made; value of the establishment, about $20,000.

One glove manufactory, importing the leathers, agraff buttons, etc., from Germany and France, cutting and sewing handmoveable machines from France; produces about 24,000 pairs of gloves, glacé and suede, yearly, all for local consumption and exportation to the Kingdom of Greece, employing twenty-five men and girls; value of establishment, about $10,000.

Three soap manufactories, using olive oil and importing potash from England and talc from Italy. They consume yearly about 80,000 gallons of olive-oil, 2,000 cwt. of potash, and 7,000 cwt. of talc. On this latter the Greek Government imposed a tax, and therefore it is no longer imported, but they still use the quantity which they had already imported before the duty had been imposed. It will be substituted by another earthy substance obtainable in Greece, this substance being used to augment the weight so that the soap might compete with other cheap foreign soaps. The production of the soap may be calculated at 85,000 pounds yearly for local consumption and part for Turkey, as owing to the increase of the manufacture in different parts of Greece the consumption of Corfu soap has been decreased fully one-half. Ten laborers in each factory are employed making the rough cases, using timber imported from Italy; value of the three establishments, about $12,000.

One umbrella manufactory. Materials, sawing and cutting hand machines imported chiefly from England and France; product daily from 10 to 12 dozen umbrellas for local consumption and for export to Greece. Laborers employed, about three hundred and fifty; value of establishment, about $5,000.

Eight leather tanning factories, using valonia, oak and pine bark. About 10,000 ox-hides and 8,000 sheep-skins are tanned yearly and consumed in Corfu, Ionian Islands, and Epirus. This work employs about sixty laborers. Value of the tanneries, about $40,000.

One steam sperm candle factory of 48 horse-power produces 1,700 pounds of candles daily for consumption in Greece. Tallow-grease and palm oil imported from England, and sulphuric acid from France. Laborers at work daily, about thirty; value of the factory, $80,000. This factory also manufactures wax candles, about 40,000 pounds yearly, for consumption in Greece, importing kerosene and paraffine from Belgium.

The wages paid in the several factories in Corfu run from 19 cents to $1.15 per day.

T. WOODLEY,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Corfu, March 31, 1889.

CROPS OF AUSTRIA-HUNGARY.

REPORT BY CONSUL-GENERAL GOLDSCHMIDT, OF VIENNA.

The Neue Freie Press of the 10th instant (July) has the following concerning the crops in Hungary:

The serious apprehensions as to the effects of the long-continued drought are, we are sorry to say, verified to a great extent. We are justified in saying to-day that this year's crop will be much smaller than those of the years 1887 and 1888 and will even reach the moderate yield of 1886. The wheat crop of 1886, according to official figures, was about 104,000,000 bushels, while this year's estimate only figures up 90,000,000 bushels. Hungary consuming about 88,000,000 bushels, there would be no surplus for export from that country.

This statement is verified by other papers. The Hungarian Post says:

This year's crop will be gathered ten days earlier than last year. On account of the prevailing drought and high temperature the quality of the wheat is not good. The kernels are small and irregular. The yield will be smaller than even our 1886 crop. Only from a few counties the reports are satisfactory, while in forty others the reports say average, below average, poor, or very poor. The territory between the River Theiss and the Maros, and also the region between the Danube and the Theiss, which always made the best showing, has suffered greatly, but most of all suffered that part of Hungary which lies on the right of the Theiss and Transylvania.

In summing up I state the following as regards wheat: Austria proper will have an average crop of about 50,000,000 bushels, Hungary (at least 35 per cent. below average) about 90,000,000 bushels, which will give the Austro-Hungarian monarchy 75 per cent. of an average crop. The official report of 1888 reads as follows: Austria proper, 60,000,000 bushels; Hungary, 140,000,000 bushels; Austria-Hungary, 200,000,000 bushels, a decrease of 60,000,000 bushels this year from last year's report.

Estimated home consumption in Austria-Hungary is 155,000,000 bushels, while the approximated yield in 1889 is from 140,000,000 to 150,000,000 bushels, hence there will be little or no export of wheat from the Austro-Hungarian monarchy.

Last year's wheat in elevators and in farmers' hands is estimated at about 25,000,000 bushels.

Roumania, which used to supply Austria with her inferior grade of wheat for home consumption, while the latter country exported her own beautiful wheat, has prohibited export to Austria, so that she must now necessarily consume her own product, which will leave, according to my calculations, very little or, in fact, nothing for export.

Reports from western Europe speak of a satisfactory crop, while Russia seems to be similarly situated as the Austro-Hungarian monarchy, although I have no reliable dates or facts to judge by.

As to other grains, the prospects are no better. Rye, barley, and oats yield a weak, average crop; maize is very promising, while leguminous plants, potatoes, and turnips are middling good; apples, pears, and plums, poor. Wine alone is very promising, although the phylloxera for several years previous reduced the grape harvest of this country considerably, and has shown up again this season. The vines present an unusually promising appearance, so that the largest expectations are entertained.

JULIUS GOLDSCHMIDT,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, July 15, 1889.

TRADE OF KALAMATA.

REPORT BY CONSULAR AGENT PANTASOPOULO.

I have the honor to forward a report indicating the kind and value of the products imported and exported into and from this port during the year 1888.

Kalamata is the chief town of the department of Messenia, and its commercial business is relatively important in comparison with other larger towns of Greece, especially in regard to the products of exportation, such as currants, figs, oil, silk, etc.

EXPORTS.

Articles—whither exported.	Quantity.	Value.
Currants:		
Austria.....pounds...	2,000,000	
Germany.....do.....	180,000	
France.....do.....	28,000,000	
United States.....do.....	4,100,000	
Russia.....do.....	1,200,000	
England.....do.....	1,100,000	
Other places.....do.....	500,000	
Total.....	27,080,000	$772,000
Figs:		
Austria.....cwt...	8,400,000	
Russia.....do.....	1,350,000	
Germany.....do.....	170,000	
Turkey.....do.....	365,000	
Other places.....do.....	365,000	
Total.....	10,650,000	453,550
Oil:		
Russia.....barrels...	3,000	
Other countries.....do.....	4,000	
Total.....	7,000	67,550
Silk, France.....kilograms...	15,000	96,500
Total exported.....	.....	1,389,600

IMPORTATION.

	Francs.
From Austria-Hungary, colonials and drapery	450,000
Germany, drapery	50,000
England, iron and drapery	500,000
France, colonials, drapery, etc	150,000
Italy, colonials, brimstone, etc	200,000
United States, various articles	30,000
Russia, cattle, corn, etc	500,000
Other states	300,000
Indirectly, by Syra, Piræus, and Patras	4,000,000
Total	6,180,000

Our port improvement, begun three years ago, is sufficiently advanced to afford shelter to ships, and in two years at most it will be certainly finished, and large steamers will be able to find, besides the facilities of landing, a complete security against all weather. Work will begin this week upon a railway which will bring Kalamata in communication with all the towns of Greece, and this will give, no doubt, a great development to our commerce.

D. A. PANTASOPOULO,

UNITED STATES CONSULAR AGENCY, *Consular Agent.*

Kalamata, March 31, 1889.

COMMERCE OF CADIZ.

REPORT BY CONSUL INGRAHAM.

The difference in duties and the refusal of credit from three to six months, which the English and Germans give, are the principal obstacles to our importations. In fancy articles, also, the Germans study the Spanish taste and prepare showy goods for these markets and send agents. A German firm has sold $30,000 worth of plows, a great innovation against prejudice in Seville alone.

The Estremaduras, the granary of Spain, to which a new railroad has been built by English capital, would afford a market for agricultural implements.

Cadiz is a distributing center for at least a quarter of a million people, and Seville for double that number, the population of the province of Seville alone being over half a million. Cadiz, with its magnificent harbor, its dry-dock and other facilities, must remain the great port of southwestern Spain, while Seville, about 100 miles up the Guadalquivir, and navigable for vessels drawing 16 feet of water and having unsurpassed facilities for handling freights, will continue to grow as the center of a region fruitful in olives, cork, wines, licorice, and all sorts of cereals and cattle. Quantities of American provisions find their way to Seville and Cadiz by Spanish lines to Liverpool. During 1888 nine vessels, all of foreign nationalities, cleared from Seville for the United States, which shows a direct trade with that port.

Probably 90 per cent. of the wine from Cadiz goes to Liverpool by steamers for transshipment, the cost through to New York being $5 per butt of 139

gallons, though by sailing vessels, of which there is the monthly line of Florez & Co., of New York and Cadiz, the freight is one-half.

Cadiz continues to be the chief port of call in southern Spain for the steamers of the Transatlantica Company, which during the present year have added to their fleet the *Alfonso XII.*, the *Alfonso XIII.*, and the *Reina Cristina*, each being 6,000 tons burden, built on the Clyde and as complete as any afloat. This company owns the dry-dock here, and the steamers take in passengers coming from even beyond Madrid for the Canaries and the Antilles and Mexico, and for South America and the Philippines.

Cadiz is the natural sea-port for Spain for all these points, as well as for Morocco, to which their steamers also ply, carrying the mails under a subsidy. The tri-weekly line between Cadiz and Tangier is reliable, and appreciated by the increasing number of Americans and other tourists visiting that interesting country as they make the round trip by way of Granada, Seville, Cadiz, Gibraltar, and Malaga, and they are now beginning to extend it to Huelsa to see the mines of the Rio Tinto Company, and Palos, where still exists in perfect preservation the Rabida, where Columbus lived, the most interesting spot for Americans in the Old World, and which has some business relations with the New in exporting copper ores of the Rio Tinto.

This point can be reached in three to four hours from Seville, over a good road built by the Rio Tinto Company or by steamers by a shorter route from Cadiz; and a new road leads up to the Estremaduras through the Sierra Morena, rich in all kinds of cereals and marbles, rivaling those of Carrara.

A company has been organized to transport its products to Seville to connect with numerous steamers of the Ibarra, the Vinnesa, and the Saenz & Cia lines, which visit the Spanish coast and foreign ports.

The new road now being constructed from Algeciras, opposite Gibraltar, to connect at Bobadilla, giving a more direct route to Cordoba, and thence to Madrid, has raised the expectations of the people of those localities.

The steamers of the Transatlantica Cia have done a large business the past year in taking emigrants from this port to the Argentine Republic, and who have also gone in large numbers in Italian and German vessels, one of the latter having taken, it was stated, about seventeen hundred, and newspapers report the whole number of emigrants from Spain to the Argentine Republic during the past year to be thirty thousand. This exodus has caused alarm, and the Government has taken measures to divert emigration to the Philippine Islands, offering inducements for the easy acquisition of land, as I observe in the Gaceta de Madrid of January 26 last.

The sailing vessels from the United States have, during the past year, brought chiefly staves, for which there has been a large demand and a scarcity.

The question of raising tobacco in Spain has been agitated during the past year, taking a somewhat definite shape.

DARIUS H. INGRAHAM,

UNITED STATES CONSULATE, *Consul.*

Cadiz, April 30, 1889.

FOO-CHOW TEA SEASON OF 1888.

REPORT BY CONSUL WINGATE.

Musters of tea were placed on the market on the 24th of May, 1888, and buying commenced on the 30th. Prices asked were generally considered too high, much higher, comparatively, than the preceding year, although the high grades of tea were superior to those of 1887. Many firms refrained from buying altogether, or only filled positive orders.

The first direct steamer for London left June 9, 1888, and the last January 30, 1889, although sales dragged along for some time longer. But there was very little life in the market, and, although there were still 14,300 chests of Congou, 3,300 boxes of scented tea, and a few chests of flowery Pekoe left on the market, the secretary of the chamber of commerce reported on the 15th of March that the market was virtually closed. The first invoice for the United States was certified on the 13th of June and the last on the 4th of March, 1889.

The total export during the season, as per customs returns, was 77,410,241 pounds, including 612,000 pounds of brick tea shipped north in April and May, 1888, the season for the movement of brick tea not entirely coinciding with the general tea season. Of this there were sent to —

	Pounds.
Europe	34,687,758
Australia and New Zealand	24,138,934
America	3,927,897
South Africa	1,948,090
Coastwise, south	3,130,141
Coastwise, north	9,577,421
Total	77,410,241

Of the tea sent to Europe 33,696,565 pounds are reported as for London and 786,590 pounds as for the Continent. Of the tea sent coastwise north 6,828,818 pounds were brick tea for Russia. The tea is described as —

	Pounds.
Congou	56,140,931
Souchong	6,072,415
Oolong	3,173,624
Scented orange Pekoe	4,279,834
Scented caper	220,496
Flowery Pekoe	256,204
Green and sorts	61,437
Mixed	376,482
Brick tea	6,828,818

The total exportation was 21,677,226 pounds less than the preceding season. The amount of tea sent to the United States, as per invoices certified at this consulate, was 3,677,286 pounds. The previous season it was 4,704,365 pounds. Of the tea sent to the United States the past season 2,427,861

pounds were Oolong and Pouchong, 1,220,057 pounds Congou and Souchong, 15,586 pounds scented orange Pekoe, 1,160 pounds flowery Pekoe, 12,622 pounds mixed and undescribed.

Whither exported.	Quantity.	Whither exported.	Quantity.
	Pounds.		*Pounds.*
New York	3,112,450	Philadelphia	18,933
San Francisco	465,650	Saint Paul	11,047
Chicago	37,263	Saint Louis	7,961
Boston	21,378	Saint Joseph	2,604

Of the tea sent to New York 86,211 pounds went via Hong-Kong and San Francisco, 74,844 pounds via Amoy, 259,810 pounds via London, 296,623 pounds via Vancouver, and 2,353,148 pounds direct. That sent direct was carried in four British steamers, which took part of their cargoes at other ports.

Of the tea for San Francisco 419,508 pounds went to Hong-Kong, thence 329,995 pounds by sailing vessel and 89,513 pounds by steam to San Francisco, and 46,142 pounds via Vancouver.

Of the tea sent for entry at other ports 33,920 pounds went via Hong-Kong and San Francisco, 56,798 pounds via Vancouver, 8,243 pounds via London, and 225 pounds via New York.

The invoiced value of all the tea sent to the United States was only (Mexican) $861,840.27 (United States gold, $653,458.05). The previous season it was (Mexican) $938,222.27 (United States gold, $738,588.36).

The entire crop of Oolong was only 56,861 half-chests, as against 91,750 in 1887 and 108,000 in 1886. Almost the entire crop was purchased by one firm, buyers here not being able to fill orders at prices satisfactory to their constituents at home.

During the season forty-eight British steamers cleared for London and sixteen British and one German for Australian and New Zealand ports. Most of these steamers took part cargoes at other ports. The unsatisfactory condition of the tea trade at this port which was noted in my last report still continued.

Reckless buying on the part of some foreign merchants early in the season enabled Chinese dealers to realize extreme profits. Later profits to Chinese even were not large, and they combined to prevent tea being brought in from the country. Foreign dealers can not so combine. Reckless buying continued until it brought disaster upon some, and few firms can call the season a profitable one. Yet all say that the demand for first-class Foo-Chow teas must continue to exist, no other teas being able to supply their place.

J. H. WINGATE,
Consul.

UNITED STATES CONSULATE,
Foo-Chow, April 19, 1889.

FOREIGN TRADE OF CHINA.

REPORT BY MINISTER DENBY, OF PEKING.

I have the honor to make the following report on the foreign trade of China for the year 1888.

The total value of the foreign trade was $249,701,600,* as against $216,841,450 for 1887. These figures do not include the values of goods carried coastwise, nor do they comprise the whole extent of the foreign trade, inasmuch as vessels of Chinese type, which are not within the control of the foreign customs, ply between foreign and Chinese ports.

CUSTOMS REVENUE.

The customs revenue for 1888 was $26,638,600, as compared with $23,622,150 last year.

EXPORTS.

The total value of exports for consumption in foreign countries in 1888 was $106,261,150, and the like value in 1887 was $96,269,650. Tea and silk make up two-thirds of the export trade. The estimated value of tea, including tea-dust, exported in 1888 was $34,836,950, and of silk in its various forms $36,915,000. As compared with the tea trade of 1887 this statement shows that the trade has not decreased. Besides the quantities stated, large amounts were conveyed overland from Hankow to Russia. Of leaf tea the value so conveyed was $4,005,750, and of brick tea $53,400.

The export of silk shows a falling off in quantity, but the value shows an increase of $561,500. Raw silk fell off 266,667 pounds in 1888 and refuse silk 700,202 pounds, but silk piece goods increased 266,667 pounds.

The export of straw braid has fallen off one-half, from 20,126,933 pounds in 1887 to 10,651,456 pounds in 1888. The reason of this decline is said to be the "dishonesty of native dealers, who cheated buyers abroad by shipping as of uniform quality bales in the center of which they had put worthless braid."

Clothing, boots, and shoes to the value of $2,423,050 were exported.

Raw cotton was exported to the amount of 27,006,133 pounds, against which 20,903,296 pounds of foreign cotton were imported. This cotton mostly went to Japan, where an increasing number of cotton-mills has been started.

Of paper 12,000 tons were exported, valued at $1,897,500. The statistical writer thinks this curious, as the paper was all hand-made.

Chinese sugar to the amount of 60,000 tons was exported, against an import of foreign sugar of 8,680 tons. One-third went from Formosa to Japan.

* The values given throughout this report were reduced to American money in the Department, the Halkwan tael being valued at $1.15. The picul was reduced to pounds at the rate of 133⅓ pounds per picul.

IMPORTS.

The total value of the imports of foreign goods was $143,500,450. The value of the foreign goods imported at the nineteen treaty ports was $121,460,150; in 1887 it was $100,818,750, a gain of 12 per cent. in 1888. But this gain is more apparent than real, as two-fifths of it came from the improved imports of opium through the foreign customs of the Kwang-Tung province. The figures of several years show a gradual increase of imports.

Cotton goods.—Cotton goods represent $51,103,700, being 35 per cent. of the total imports. Gray and white shirtings absorb one-third; cotton-yarn, one-third; cloths, jeans, drills, sheetings, and cotton lastings the balance. The import of cotton yarn increased from 79,147,745 pounds in 1887 to 91,129,067 pounds in 1888. Much of this article came from India.

Woolens.—Woolen goods are also expensive and not adapted to Chinese use. In 1888 the imports amounted to $5,862,700.

Metals.—In metals $8,020,050 represents the value of imports. Of this sum iron goes for $2,512,750; tin, $2,455,250; lead, $1,117,000. A great portion of this iron was railroad, bar, and old iron. Tin is exported from China; 2,062,000 pounds were exported in 1888.

Miscellaneous.—Of fish the importation was $3,073,950; matches, $1,162,000; kerosene oil, $2,551,850; rice, $11,077,950. Matches are manufactured in China. The consumption of fish vastly exceeds the imports. Of kerosene in 1887 12,015,135 gallons were imported, and in 1888 16,613,090 gallons. The fluctuation in the quantities imported for various years is to be considered with reference to unconsumed stocks on hand in Shanghai. Russian oil entered China during 1888 for the first time. The great demand for rice came from the Kwang-Tung province. The value of imports from the United States was $3,907,700 in 1887, and in 1888, $3,617,900. The value of exports to the United States was $10,307,450, as against $13,277,900.

TOTAL TRADE WITH PRINCIPAL COUNTRIES.

Countries.	1888.	1887.
Hong-Kong	$118,900,800	$102,527,100
Great Britain	55,158,100	48,471,350
Continent of Europe	18,283,850	16,252,950
Japan	10,737,500	8,829,700
India	8,814,500	7,285,250
Russia:		
Siberia	5,403,850	6,559,600
Odessa	2,551,800	1,511,100

EXCHANGE.

The average value of the Haikwan tael continued to decrease in 1888. A table appended to the statistical report shows that since 1868 the equivalent of the tael in English money, at sight of exchange, went gradually down from 6*s.* 5*d.* that year, to 4*s.* 8*d.* in 1888. In my report last year I discussed the

effect of lowness of exchange, and showed that prices in China for articles of ordinary consumption were not affected by it, and that it was not an unmixed evil. I adhere to these views.

The average value of the Haikwan tael in 1888 was, in English money, 4*s*. 8⅜*d*.; American gold, $1.15; French francs, 5.93; German marks, 4.75; Mexican dollars, 1.54. The picul is equivalent to 100 catties, or 133⅓ pounds avoirdupois, or 60,453 kilograms. The catty is equivalent to 16 taels, or 1⅓ pounds avoirdupois, or 0.604,53 kilograms.

SHIPPING STATISTICS.

Of vessels entered and cleared in 1888 the representation of the most important countries was as follows.

Flag.	Number.	Tons.
American	234	84,455
British	15,115	14,069,260
Chinese:		
Ships	6,783	5,547,170
Junks	2,271	197,359
German	2,762	1,570,035
Japanese	326	281,900
Spanish	77	38,471
French	176	268,644

The shipping statistics show a very slight increase of tonnage over 1887.

BONDING FOREIGN GOODS.

The system of bonding foreign goods was introduced in 1888. The China Merchants' Steam Navigation Company has a monopoly of the right of storage. This privilege has been sought by foreign merchants to be extended to other owners of warehouses. I made an effort to secure for the Pootung Wharf and Godown Company the right to store bonded kerosene, but I have not yet succeeded in securing it. The bonding of goods has been small, mainly, as foreigners contend, because of the monopoly given to one Chinese corporation.

RAILWAYS.

In 1888 the railway from Tien-Tsin to Tongsan, a distance of 80 miles, was built. It takes to a market the products of the Kaiping coal mines. As the initial railroad in China its success is to be desired by persons interested in foreign trade. Should the Americans who are now working the Ku-Shan-Tzu mines, succeed in their enterprise, it is likely that other mines will be opened, and that before many years numerous railroads will be built.

All the above figures are taken from the Returns of Trade and Trade Reports, for the year 1888, prepared by the statistician of the customs.

CHARLES DENBY,

Minister.

UNITED STATES LEGATION,

Peking, April 30, 1889.

LAWS OF INHERITANCE IN MALTA.

REPORT BY CONSUL WORTHINGTON.

PRIMOGENITURE.

The law of primogeniture does not prevail in Malta. Children, male or female, inherit in equal shares. Fideicommissa or entail could be founded up to 1864, after which date any further foundations were prohibited. The laws of Malta are based on the Roman law and the continental codes.

CODE.

Malta has its own code embodied in civil, commercial, and criminal ordinances. Malta being a Crown colony certain acts of Parliament which include the British dominions have the force of law therein. The ordinances are enacted by the council of government of Malta.

WILLS.

A will may be public or secret. The former is received and published as an act by a notary in the presence of two witnesses, and is lodged by the notary in the Government archives after he has made a copy thereof in his register. The original always remains in the archives. The secret will may be written by the testator or a third party, but must be signed by the testator. It is then placed in an envelope and sealed and delivered by testator either to a notary or to the registrar of the court of voluntary jurisdiction in presence of the judge. If delivered to a notary, he draws up an act of delivery to be signed by testator, two witnesses, and notary, who will present will to said court for preservation. There is no special court for deciding questions as to wills and the inheritance of property. The first hall of Her Majesty's civil court decides such questions. Appeals can be taken to Her Majesty's court of appeal in Malta and from thence to the judicial committee of the privy council in London. Wills made in foreign countries according to the laws of such countries are held legal in Malta. Parents may dispose as they like of their property with the exception of the *légitime*, a share reserved to descendants, and, in their default, to ascendants of the deceased. The *légitime* of legitimate children, or those legitimated by subsequent marriage or by decree, is the third part if such children are not more than four, or the half if they are more than five. Such *légitime* is divided equally. If there is only one child it takes the whole of such third part. If there are no descendants, the ascendants take such part.

MARRIAGE.

The civil law does not provide as to consent of parents at any age, and it is not essential. By canon law a male can marry at fourteen and a female at twelve. On attaining the age of eighteen a person can manage his own affairs. No consent is necessary. Marriage is only a religious ceremony engendering

civil rights. The Maltese are Roman Catholics, and their marriages are regulated by the canon law and the Council of Trent. Marriages among Protestants are regulated by the law of England. A civil contract is sufficient without a religious ceremony for such as declare that they do not belong to a special religious denomination. There is no official empowered to celebrate civil marriages. Clergymen can not celebrate marriages between parties having different religions, and different from the officiating clergyman. It is held, however, that a marriage celebration by a clergyman of the established Church of England between parties of different religions is valid. The question has never been tested in a court of law.

Marriages are recorded in the public registry within fifteen days under a penalty. Marriages celebrated in a foreign country according to the laws of that country are held to be legal in Malta as to the natives thereof. If celebrated in accordance with the canon law and Council of Trent, even if all the formalities required by the law of the country where the marriage is celebrated are not observed, marriages are valid in the case of Roman Catholics. A marriage between Maltese Roman Catholics celebrated abroad before a British consul only is held valid here, in accordance with an act of Parliament. If a native of Malta marries a foreign woman, she, becoming a resident of Malta with her husband, becomes entitled to all the rights of a native woman as to property. There is no difference between natives and aliens with respect to property. The rights of husband and wife are reciprocal. If there are lawful or legitimate children, the survivor has a right to the fourth part, in usufruct, of the deceased's property. In default of children the survivor has the right to the fourth part in full ownership. All profits made after marriage are divided equally.

If the deceased husband or wife leaves no will and leaves—

(*a*) Legitimate issue, the surviving husband or wife takes one-fourth of the estate in simple usufruct.

(*b*) Parents or illegitimate children, or brothers or sisters, survivor takes one-third in full ownership.

(*c*) Parents and brothers or sisters, one-third in full ownership.

(*d*) Parents and illegitimate issue, one-fourth in full ownership.

(*e*) Collateral next of kin till the sixth degree, two-thirds in full ownership.

(*f*) Collateral next of kin and within the sixth degree, the whole estate in full ownership.

The wife can make a will and dispose of her property without the consent of her husband. The law makes no distinction between the property of husband and wife. Both can dispose as they like, saving the *légitime*. If persons have no children and die without making a will, the father and mother, together with the brothers and sisters, are entitled to equal shares. If deceased has no surviving parent or brothers or sisters, the estate goes to the next of kin up to the twelfth degree. If the deceased leaves no heirs within the said degree, the estate devolves to the Crown.

The above rules are subject to modification if the deceased leaves illegitimate issue or a surviving husband or wife.

Persons can adopt the children of others and give them all the rights of their own, but adoption is only permitted to persons of either sex who have no children (legitimate or legitimated) who have attained the age of fifty, or at least are eighteen years older than those they desire to adopt. The adopted child has all the rights of a lawful child as against the person adopting him only, even if the latter has children after the adoption. Adoption can only be effected with the authorization of the court of voluntary jurisdiction by means of a public act, to be inscribed in the public registry.

Children born out of wedlock may be appointed as heirs by their parents, provided the latter do not have legitimate issue, in which case such children can only get one-third of the *légitime* to which they would have been entitled had they been legitimate, and provided such parents do not leave ascendants surviving, in which case such children can not receive more than two-thirds of the whole estate.

If the parents die intestate and leave—

(*a*) Legitimate issue, children born out of wedlock can only succeed to one-third of the *légitime*.

(*b*) Ascendants and husband or wife, five-twelfths of the estate.

(*c*) Ascendants only, or husband and wife and no ascendants, two-thirds of the estate.

(*d*) If there is no legitimate issue, or ascendants, or a surviving husband or wife, such children succeed to the whole estate to the exclusion of all next of kin.

The above remarks only hold good when such children have been legitimated by a decree of the court or have been acknowledged by parents. If not so legitimated or acknowledged, but have been declared to be children of a person by judgment, they only succeed to one-third of the *légitime* in all the above cases.

They are only entitled to the whole estate, to the exclusion of the Crown, if the deceased leaves no parents, brothers, or sisters, or next of kin within the twelfth degree.

Foreigners can hold property in Malta.

JOHN WORTHINGTON,
Consul.

UNITED STATES CONSULATE,
Malta, April 22, 1889.

AMERICAN INTERESTS IN FLORENCE.

REPORT BY CONSUL DILLER.

By Executive order, which went into effect July 1, 1888, this consular district was made to embrace the provinces of Florence, Arrezza, Bologna, Ferrara, Forli, Modena, Ravenna, and Riggio, containing a population of 2,755,907 souls, or about one-tenth of the population of Italy, thus forming a compact and homogeneous district in the center of the Kingdom, and embracing the most industrious and fertile portion.

A CENTRAL DEPOT FOR AMERICAN AGRICULTURAL MACHINERY.

In my last annual report I took occasion to suggest the propriety of establishing an entrepôt or large warehouse for the exhibition and sale of our agricultural machines and mechanical implements, either at Florence or at Bologna, as being in the central portion of Italy and easily accessible. The large landed proprietors are slow in making changes in the antiquated manner of cultivation, first, because of the expense, and second, on account of their manner of living fully up to their income from year to year. But with the intelligent peasant proprietors it is different. Being a laborious, saving people and possessed of a keen sense of the great advantages of improved means of cultivation, they are generally quick to take advantage of the same when properly brought to their attention. Several attempts have been made by individuals in the United States to introduce improved agricultural machines and implements here without any great success, because of the incompetency and unreliability of the agents employed. This would be remedied by the establishment of a grand central depot, such as I suggest, placed in charge of competent and practical men able to instruct the people in the use and care of the machinery and implements. The tax upon the product from land is very onerous, averaging about 45 per cent. on the income, consequently the larger the product the greater the tax, the producer and the Government both being benefited. I am convinced the subject is well worth the serious consideration of those of our people at home who are interested in producing improved means of cultivating the soil and extending their business with foreign countries.

AMERICAN DAIRY FARM.

One of the new industries inaugurated during the year in Florence is that of a large dairy farm established by an American gentleman, Mr. Le Roy de Koven, of Chicago, at San Donato, on the outskirts of the city. Operations were commenced on the 1st of October last, and thus far it has proved quite successful in filling a long-felt want by supplying pure, fresh milk and butter daily to its many patrons. Like all new enterprises here it met in the beginning with much opposition from those interested in that line of business, and direful results were predicted to the enterprise. The proprietor,

however, with characteristic American pluck, kept right on, depending largely on the foreign element residing here, and the result, he assures me, has met his most sanguine expectations, not being able to fill one-half the orders received. He has imported from Switzerland thirty thoroughbred cows and one bull of the celebrated Simmenthal (Bernese) breed of cattle and ten brown Schwyzer cows and two bulls. The Simmenthal cows, he informs me, yield 10 quarts of very rich milk per diem, all the year round, and the brown Schwyzer average 12 quarts, but the milk is not so rich.

The stock and plant of this establishment cost 30,000 francs, not including the buildings, and the rental involves an additional outlay of 5,000 francs per annum.

Fresh milk and butter is delivered at the residences twice every day if desired. Milk warm from the cow for children or invalids undergoing the milk cure is made a special feature. The prices for milk or butter vary according to the season. Winter prices for pure milk, 8 cents per quart; fresh butter, 40 cents per pound. All the latest dairy inventions and improvements are used, and the establishment is managed by men thoroughly educated in dairy products.

ISAAC R. DILLER,
Consul.

UNITED STATES CONSULATE,
Florence, January 11, 1889.

BERMUDA.

REPORT BY CONSUL BECKWITH, OF HAMILTON.

AGRICULTURE.

The chief exports from Bermuda are agricultural products, and of these the main dependence of the planters or farmers is the onion crop. This year that crop was unusually good, both in quality and quantity. Owing partly to an overproduction of this vegetable here and partly to an increased competition in the States, due to the mildness of the past winter, the prices obtained therefor were extremely low. This has naturally proven disastrous to the planters, who were looking for better prices, and to the merchants, brokers, etc., through whom they transact their business, and who, by giving credit and advancing money to these planters, carry them along until they can realize on their crops. In consequence money is very scarce, and the outlook for the coming winter most unpromising. The potato crop was a failure owing to a blight. Many farmers got only a barrel yield from a barrel planted. Beets sold at fair prices, but they are grown here too large for the market in New York. Tomatoes also sold well, but there were comparatively few planted. The trade in arrowroot has fallen off very considerably. Little of this plant is raised here now, and the demand therefor is steadily diminishing. The following tables will show the amounts exported of the different products for the years 1887–'88.

The growing of Easter lilies has become an important industry in Bermuda. Some lily flowers are shipped to the States at the Easter season, but the main profit is from the lily bulbs or roots, which are shipped to florists, nurserymen, etc., during the months of June and July at prices varying according to size and quality. Formerly not much interest was taken in agriculture by any except the actual farmers, but this year a society for promoting all agricultural interests was formed, to which the leading citizens and Government officials contributed. An exhibition was given which proved very successful both as to the number and the quality of the exhibits and did much to stimulate an interest in this branch of industry.

EXPORTS TO THE UNITED STATES.

The following tables give the shipments of produce to the United States and their values for the official years ending June 30, 1887–'88:

Articles.	1887.		1888.	
	Quantity.	Value.	Quantity.	Value.
Arrowroot.....pounds...	20,500	$4,867	7,350	$1,791
Beets, etc.....packages...	3,260	3,665	4,383	3,119
Onions.....boxes...	217,450	220,783	178,997	291,007
Potatoes.....barrels...	129,179	144,569	26,279	131,532
Tomatoes.....boxes...	81,292	30,518	23,148	7,679
Total.....	.....	404,402	.....	435,128

EXPORT OF WINES AND LIQUORS.

The item of liquors in the following table, amounting to $389,376.14, is mostly American whisky, exported from the United States to avoid the immediate payment of internal revenue tax. It has been kept here in bond, and is returned to the United States. The whisky is thought to age and improve here much more rapidly and better than in the States, owing to the warm, even temperature. The amount of whisky returned to the United States this year amounts to $381,161.93, while last year the shipment amounted to $388,051.81, as per the following table:

Description.	1888.	1889.
Liquors	$1,893.04	$5,107.01
Wines	.....	2,968.47
Rum	3,345.18	138.73
Whisky	388,051.81	381,161.93

CLIMATE.

The climate of Bermuda is remarkably mild and equable, the thermometer seldom falling below 54° F. in winter or rising above 84° F. during the summer. Many invalids resort here for their health, and those who are care-

ful and avoid exposure to extremes of weather and exertion generally derive benefit. The climate seems more beneficial in cases of dyspepsia and nervous disorders or in the case of those run down by overwork than in bronchial or pulmonary complaints. Many of those afflicted with the last-named troubles have, however, been cured here. During the winter months rain is frequent and abundant, while in the summer the climate is comparatively dry, with only occasional showers. Owing to the nature of the soil, which is extremely porous, and to the excellent condition of the roads it is possible to go about dry-shod in a short time after the most severe rains, so that no one need remain indoors on account of dampness for any great length of time. The sanitary regulations of the islands are excellent, and the place is considered very healthy.

TOURISTS AND VISITORS.

The number of tourists and visitors coming to Bermuda from the United States and other countries is constantly and steadily increasing. During the past year this increase was more marked than heretofore, the number being about 1,416 from November 1 to May 1, as against 1,223 persons during the same time in the previous year. Of this number the great majority were Americans. The largest influx of visitors occurs during the months of December, January, February, and March, which form the Bermuda season. All the hotels and boarding-houses were well patronized during the past season and made good profit.

H. W. BECKWITH,
Consul.

UNITED STATES CONSULATE,
Hamilton, June 30, 1889.

EMPLOYMENT OF CHILDREN IN GERMAN FACTORIES.

REPORT BY CONSUL FALKENBACH, OF BARMEN.

Highly important social phenomena are described in the report of the Saxon factory inspectors for 1889, where they refer to the employment of children and juvenile workers in industrial pursuits. The Saxon inspectors, whose service is the best organized in Germany, state first of all that during the past year no less than 10,652 children from twelve to fourteen years of age, an increase of 1,000, in round numbers, over the previous year, were employed in industrial establishments. Both the great number and its rapid rise in the course of a single twelvemonth call loudly for interference in the interest of the health and morality of the people. Physicians, hygienists, and philanthropists are all of one opinion—that the child does not suit the factory at all. Its development, which is most rapid just at this age, is sure to suffer harm from industrial occupation, so that the strength of the national stock and its capacity for being utilized for defensive purposes in time of war can not remain unaffected.

A short time ago it was pretended that juvenile labor in Germany had declined. In that portion of the German Empire where industry is most at its height the reverse has now been proved. An army of ten thousand factory children is a picture in the history of civilization by no means flattering to humanity. There is a point, therefore, at which a commencement can be made with the reform of the industrial regulations, namely, by forbidding every kind of child-labor.

The latest reports of the Saxon factory inspectors further contain the very serious and important statement that during the past year the number of juvenile workers between the ages of fourteen and sixteen increased fully 20 per cent., while the number of the grown-up workers increased only 8 per cent. Instead of 19,953, the number in 1886, there are now no fewer than 24,111 juvenile workers employed in the largest industrial district of Germany. That the increase of production is so little due to the occupation of grown-up workers, the fathers of families, and so largely to that of beginners who receive much lower wages, is necessarily attributable to some cause.

The present laws for the protection of labor permit juvenile workers to be employed ten full hours of the day, or nearly as long as is the case with grown-up workers. This limit far exceeds what is right and proper or necessary for the learning of a handicraft. It induces the employer, who is compelled by the struggle of competition, to abandon all scruples to substitute younger and cheaper workers for older men who have to provide for families. This inducement could be easily got rid of by simply reducing the working hours of youth to a healthy maximum—to the six-hour limit. By this means overproduction, early demoralization, and the inversion of all family institutions would be fought against at one and the same time.

JOSEPH FALKENBACH,
Consul.

UNITED STATES CONSULATE,
Barmen, June 1, 1889.

COMMERCE OF REVAL.

REPORT BY CONSULAR AGENT VON GLEHN.

The imports and exports for the year 1888, as compared with those of the preceding year, show a falling off. Of imports the deficiency shows principally on cotton, of which, during the year 1887, a much larger quantity was imported, for reasons afterwards explained. Exports were not so large during 1888, no doubt on account of the exchange having followed a rising tendency during the last eight months of the year, causing losses to exporters. Last year at this date 1 gold ruble was equal to 1.97 rubles paper currency; to-day it is equal to 1.48 rubles paper currency, an unusually rapid rise, which, however favorable for the general financial position of the Russian Empire, was a source of great dissatisfaction to tradesmen (importers as well as exporters), as calculations of prices were overthrown by the continual changes.

The following table gives the total value of imports and exports for the last six years:

Year.	Imports.	Exports.
1888	$21,408,993	$10,165,371
1887	29,219,050	16,656,693
1886	21,835,316	5,051,362
1885	29,159,763	6,495,901
1884	34,729,204	9,742,762
1883	42,365,734	8,909,659

IMPORTS.

Cotton imports, which were extraordinarily large during the year 1887 on account of the duty being raised in December of that year, causing importers to lay in large stocks before the higher duty came in force, have doubtless on that account been less extensive during the year ending December 31, 1888. On the whole, considering this fact, imports of American cotton have not diminished, and so far the cotton produced on plantations in the south of Russia has not in the least been able to compete with American cotton, as spinners do not care to use the same on account of its inferior quality, as it is not properly cleaned.

Besides cotton there was imported from the United States gum and resin, 550,944 pounds, against 1,545,732 pounds in 1887 and 835,560 in 1886. Of cotton there arrived direct from the States 32,375,196 pounds, against 69,496,632 pounds in 1887; via continental ports 47,787,984 pounds, against 80,724,744 pounds in 1887. All imports from the States came forward in steamers under flags of other nationalities, as no American vessels entered or left this port during the year 1888.

IMPORTS BY COUNTRIES.

Countries.	1888.	1887.	1886.	1885.	1884.
United States	$5,174,890	$9,386,743	$6,585,262	$6,008,465	$7,503,120
Great Britain	10,432,328	8,928,782	7,488,774	11,476,847	12,708,275
Germany	4,055,298	6,502,459	7,827,472	6,868,586	8,639,340
France	4,872	2,135,590	55,097	145,405	684,980
Denmark	665,008	923,554	259,984	189,072	491,494
Netherlands	636,174	614,831	637,068	1,641,652	1,993,045
Sweden	185,692	280,557	153,292	60,864	14,123
Brazil	60,858	234,004	280,010	306,853	342,600
Norway	93,575	100,775	177,777	143,782	207,286
Spain	5,525	98,341	255,440	1,310,735	644,587
Belgium	73,412	10,497	34,732	81,550	42,403
Italy	20,857	2,860	163,992	742,345	976,698
Portugal	.....	.....	3,090	332	165,798
Turkey	.....	.....	.....	119,907	305,547
Africa	.....	.....	301,675	693,105	143,544
Total	21,408,993	29,219,050	24,208,629	29,794,557	34,867,841

IMPORTS BY ARTICLES.

Articles.	1888.	1887.	1886.	1885.	1884.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Cotton	80,532,204	150,221,376	94,800,384	86,827,392	95,523,912
Yarns	2,356,380	3,325,788	2,867,004	3,636,792	3,875,184
Olive-oil	1,364,904	1,369,548	3,019,968	14,344,956	14,193,684
Salt, foreign	352,188	2,090,628	792,072	1,748,808	12,188,556
Salt from the Crimea	30,273,480	43,398,108	88,564,968	36,910,872	22,313,664
Herrings	6,442,344	5,306,112	5,621,616	8,734,716	9,040,092
Wine in casks	559,296	390,888	563,148	736,812	4,629,852
Fruits	607,140	1,084,716	1,161,540	650,052	810,756
Coffee	1,006,372	997,020	657,864	1,391,220	1,488,708
Rice	116,100	56,232	405,684	1,818,684	1,505,592
Maize	.....	15,084	216	4,957,092	7,246,908
Drugs	15,459,120	16,489,584	13,577,256	17,842,644	25,924,500
Metals	12,537,828	29,530,656	8,480,124	17,590,608	21,224,880
Coals	120,885,660	110,186,892	111,559,572	104,969,016	103,262,148
Machinery	8,294,292	10,058,004	7,188,912	10,901,880	14,414,138
Iron and steel goods	3,392,568	3,619,772	3,723,048	4,005,312	6,197,040
Tea	210,168	124,488	644,540	571,140	750,564

EXPORTS BY COUNTRIES.

There were no exports from this port to the United States during the year ending December 31, 1888.

Countries.	1888.	1887.	1886.	1885.	1884.
Great Britain	$4,256,933	$5,418,589	$1,984,268	$2,815,868	$1,716,816
Germany	1,700,542	1,690,183	1,178,769	2,101,060	2,158,804
Sweden	601,237	1,330,262	421,552	237,040	173,751
Netherlands	1,294,025	1,283,610	808,717	742,204	2,768,039
France	1,136,604	1,257,922	302,952	329,665	1,091,897
Denmark	397,603	312,196	197,791	182,728	268,033
Belgium	643,621	292,662	117,067	132,062	170,994
Norway	99,840	43,360	.....	1,035	20,730
Portugal, etc	34,965	27,907	.....	.....	.....
Total	10,165,371	11,656,693	5,011,119	6,541,664	9,464,065

EXPORTS BY ARTICLES.

Goods.	1888.	1887.	1886.	1885.	1884.
Spirits.....gallons...	4,894,096	6,102,681	6,042,840	2,820,990	1,514.207
Oats.....bushels...	8,961,648	7,555,914	1,982,994	1,876,196	5,204,442
Rye.....do.....	1,163 664	1,952,886	959,298	500,190	1,246,254
Wheat.....do.....	300,120	729,222	596,238	2,532,726	240,528
Buckwheat groat.....do.....	129,930	199,740	150,558	44,628	452,988
Barley.....do.....	633,186	155,340	106,878	136,170	401,160
Linseed.....do.....	874,176	806,964	220,134	106,518	63,678
Oil-cakes.....pounds...	11,243,844	15,871,608	6,969,744	8,416,512	11,517,360
Flax.....do.....	37,526,616	44,449,992	17,457,516	15,858,324	23,981,400
Tow.....do.....	4,812,948	8,213,904	3,265,632	3,194,784	3,375,072
Mineral oil.....do.....	5,711,220	4,706,280	1,669,824	4,589,928	1,447,416
Deals.....pieces...	102,081	63,048	152,697	147,057	105,875

SHIPPING.

As the figures giving the general movement of ships inward and outward of our harbor have not yet been published, and not wishing to detain this report any longer, I shall give these particulars in a later report separately. As appears from the foregoing statistical tables, the year ending December 31, 1888, has not been one of great prosperity at this port compared to previous years, which doubtless is due to a great extent to the fluctuations of our paper currency, which checks all enterprise.

E. VON GLEHN,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Reval, April 13, 1889.

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REPORTS

FROM THE

CONSULS OF THE UNITED STATES.

CIDER MANUFACTURE IN FRANCE AND ENGLAND.

No. 106½.—JULY, 1889.

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CONSULAR REPORTS

ON

CIDER MANUFACTURE, ETC.

No. 106½.—JULY, 1889.

FRANCE.

REPORT BY CONSUL-GENERAL RATHBONE, OF PARIS.

THE FRUIT AND THE SOIL.

The apples which are used in the production of cider are grown in about sixty of the eighty-three departments into which France is divided. The quality of the fruit depends largely upon the condition of the soil. If the latter is hard and wet, the fruit is sour, producing a thin cider. A calcareous soil gives a mild, insipid juice, while a too sandy soil yields a juice lacking in tannin, the preserving ingredient of the liquid.

The best soil is a mixture of clay and sand, with plenty of moisture. Sweet apples contain the most sugar; they give more cider than the bitter ones, but it is flat, feeble in color, and does not keep long. Bitter apples contain the most tannin and furnish the least cider, but the cider obtained is strong, generous, rich in color, and keeps a long time.

Sour apples are the least rich in sugar and tannin. They furnish the most cider of all the varieties, but it is of a very poor quality, feeble, thin, disagreeable to taste, and discoloring quickly on being exposed to the air.

After lengthy experiments the professors in the agricultural schools have decided that, to make the best cider, apples ought to contain:

Water	per cent..	80
Sugar	do....	17.3
Tannin	do....	.5
Mucilage	do....	1.2
Fermenting acid	do....	.167
Other substances	do....	.833
Total	do....	100.000

The tannin assists to clarify the cider and also to preserve it; the mucilage prevents the alcohol from turning the cider into acetic acid,

and the sugar gives the alcohol. The apples containing these qualities in the best proportions are perfumed, slightly bitter, a little sour, and possess a density of at least 10° Baumé. Generally speaking, the apples of the first season, ripening in August and September, are the poorest; those of the second season, October and November, are fair, and those of the third season, December and January, are the best.

As very few varieties of apples contain the desired qualities in the proportions given, they are generally mixed, only those of the same season being used.

There are some varieties which, employed alone, give excellent cider. They contain, in effect, all the principal elements in the right proportions. Such are: First season—Reine-des-Hâtives; second season—Fréquin-Rouge, Barbarie; third season—Pomme-Bramtot, Martin-Féssard, Amère-de-Berthecourt, Rouge-Bruyère-Nouvelle, Bédan, Peau-de-Vache-Nouvelle.

The varieties richest in alcohol are: First season—Reine-des-Hâtives; second season—Pomme-de-Chat, Fréquin-Rouge, Argile-Nouvelle, Barbarie, Rosine; third season—Binet, Bédan-des-Parts, Rouget, Belle-Cauchoise, Galopin.

The varieties the most rich in tannin are: Second season—Martin-Féssard, Rouge-Bruyère-Nouvelle; third season—Pomme-Bramtot.

The varieties the most rich in mucilage are: Second season—Doux-aux-Vespes, Paradis, Gros-Fréquin, Argile-Nouvelle, Binet-Gris; third season—Rosine, Pomme-Ridel, Margotton, Rouget, Argile, Fréquin-Audièvre, Groseiller, Bédan, Or-Milicent.

The only other varieties that the authorities recommend are: First season—Blanc-Mollet; second season—Jaunet-Pointu, Précoce-David, Écarlatine, Vice-Président-Heron; third season—Pomme-Marabot, Pomme-à-Tannin, Marie-Lerand.

The apples should be gathered when just ripe, and care should be taken not to bruise them. If they are too green, or are beginning to decay, they lose a portion of the sugar so essential to good cider.

PREPARING FOR THE PRESS.

There are three methods of reducing the fruit to pulp. First, by a machine known as the tour à piler. This consists of a circular trough, around which a stone wheel is made to revolve by horse-power. This antiquated method is gradually being superseded by two new varieties of machinery. These are the grater—a machine with little saw-like teeth set close together, and the crusher—a machine very similar to our coffee-mills, but much larger, and capable of producing 60 to 80 hectoliters* of pulp per hour. This is considered the best machine, as it does not break the seeds, the essential oil of which imparts a disagreeable flavor to the cider.

MACERATION.

The pulp is left in vats from twelve to fifteen hours to macerate, being occasionally stirred that all parts of it may be exposed to the air. Maceration heightens the color of the product, aids in the disintegration of the fibrous tissue, and increases the ferments.

*1 hectoliter equals 2.803 bushels.

PRESSING.

Before putting the pulp into the press, the bottom of the latter ought to be lined with a thin layer of straw, a wire netting, or a wattle of small oak or beech branches. Straw is objectionable because it imparts a bitter taste to the juice, while a wattle of the above-named woods yields a small additional quantity of tannin, so necessary to preserve the cider; moreover, while straw increases the flow only 7½ per cent., the wattle increases it 15½. About 95 per cent. of the apple is juice. Formerly it was not considered wise to express more than one-third at the first pressure; second and third, and even fourth, being made with water added. Now the press is considered best that expresses the most juice. The hydraulic presses now in use obtain from 65 to 75 per cent. of the pure juice at the first pressure without drainage. This makes the best cider. For a second pressure, water equal to the amount of juice still left in the pulp is added. The product is thin, and will not keep long. In some instances sugar must be added that it may ferment at all.

DIFFUSION PROCESS.

The process of diffusion, so successfully used in extracting the sugar from the beet-root, has been tried in making cider. The old method of diffusion was not very satisfactory, the process being long and laborious and the product weak. Three vats were used, placed in a line one below another. All three were filled with pulp; into the first one was then poured as much water as it would hold. At the end of twelve hours it was allowed to run into the second vat, and, after another twelve hours, into the third vat. The product was somewhat improved if warm water was used. This method was employed only where presses were not easily obtainable. Recently, however, new methods of diffusion have been discovered, by means of which the inventors claim to be able to get 85 to 95 per cent. of the pure juice. By these new processes the apples are not crushed, but cut by a special machine; they are then placed in the diffuser, and the water made to pass through. The peculiarity of the process is, that the water does not mix with the juice at all, but drives it out before it.

An important thing to be noticed in cider made by diffusion is that it contains no ferments. It is like what we call sweet cider, and always remains so without any artificial means being employed; hence it can be kept any length of time and shipped any distance. It will ferment only if sugar or yeast be added. This means of making cider would be particularly attractive to those who, either from principle or taste, are opposed to fermented drinks.

There is a small portion of the so-called champagne cider which is made by bottling this cider and adding white sugar candy to give it the necessary carbonic-acid gas.

FERMENTATION.

Fermentation is accomplished by the aid of yeast, which exists in the apple and is expressed with the juice. The principal object of fermentation is to change the sugar into alcohol.

The first process is carried on at a temperature of from 12° to 18° centigrade (54° to 64° Fahrenheit). If fermentation is refractory,

the mouts (juice) is stirred vigorously with a bunch of twigs, and, if that does not succeed, a little yeast in fermentation is introduced. This stage of fermentation is performed in either open or closed vessels, and either before or after pressing. The ordinary method, however, is after pressing, and in casks with the bungs drawn. In this way the process lasts from five to six weeks. The bung is then driven in tightly, and a small gimlet-hole made which is kept open by a straw. Under these conditions the secondary fermentation is effected slowly, and the sugar, the largest part of which is still unchanged, is transformed into alcohol, the carbonic-acid gas escaping through the gimlet-hole. After a month or six weeks the liquor is withdrawn into air-tight casks, which are not quite filled. In the space left, the dregs are collected by the action of the gas; they can then be removed, leaving the cider much clearer. In cases where the tannin has been deficient, and the cider is not sufficiently clarified, 60 grams of cachou dissolved in a liter of cold cider are added to every hectoliter. The tannin in the cachou precipitates all albuminous matter, and prevents the cider from turning black on exposure to the air.

The method used in Jersey is different, and is considered somewhat better, and Jersey cider has the reputation of being the best and most durable produced.

The first process is accomplished in open vessels at a temperature of 15° to 18° centigrade. The cider is then drawn off into closed casks, which are not quite filled. When sufficient gas has collected in this empty space to extinguish a candle, the cider is drawn off into other casks, the process being kept up until no more gas remains. All the casks used are well dried, well washed, and fumigated with brimstone. The cider thus prepared lasts many years, can be transported any distance, and possesses a peculiarly agreeable and piquant flavor.

By no process is the juice considered to be cider under six to eight months.

The best brands in France will keep from three to four years. It is preserved by pouring in enough oil to completely cover the top of the cider from the air. The cider, being always drawn from the bottom of the vessel, does not derange the oil.

Barreled cider will not stand shipment, and is, consequently, nearly all consumed in the locality where it is produced.

CHAMPAGNE CIDER.

Champagne cider is of recent date, but the trade in it is already assuming considerable proportions. It owes its popularity to the facility with which it can be shipped and preserved, and to its sparkling qualities.

To make champagne cider, bottle the juice after the first or boiling fermentation. Champagne bottles must be used, as the ordinary ones are not strong enough. The rest of the process is very similar to that used in making sparkling wines, except that it is less elaborate. This is growing to be more and more the cider of commerce. There is no limit to the time that this cider will keep, if it has been properly bottled and corked.

GENERAL REMARKS.

A cider is prepared that can be kept in casks for five to six years and exported to India or South America. The apples used are very

rich in saccharine, and the juice contains from 10 to 11 per cent. of alcohol.

Before fermentation, to every hectoliter are added 50 grams of tartar of potassium and 500 grams of chips of green beech. After fermentation the cider is heated by means of an œnotherme—an instrument used in the manufacture of wine—and instantly recooled. This apparatus costs about $80. This process, however, destroys somewhat the flavor and quality of the cider.

CIDER CELLARS.

Cider cellars should be kept free from humidity; should be maintained at a temperature of 8° to 12° centigrade; should be well supplied with fresh air; should be placed in localities which are free from all causes tending to jar the ground, such as railways, etc. No vegetable matter liable to ferment and vitiate the air should be allowed in them.

CIDER DISEASES AND REMEDIES.

Bad odor.—The vats or casks which have not been properly cleaned give a bad odor. To get rid of this add a half liter of oil to every hectoliter, and shake the vessel. Charcoal made from oak is a satisfactory and cheap substitute for oil.

Alteration.—Add 2 or 3 per cent. of alcohol. But, if the apples have been sufficiently rich in sugar, the cider will have from 10 to 12 per cent. already, which is amply sufficient.

Souring.—Draw off the cider and to every hectoliter (26.417 gallons) add a half liter (1.0267 quarts) of rice and two kilograms (1 kilogram=2.205 pounds) of crushed brown sugar, dissolved in two liters of warm water and a liter of brandy. The alcohol coming from the brandy, the sugar, and the starch in the rice, combines with the acids to form balsamic ether. In case the remedy fails, the best thing that can be done is to convert the cider into vinegar.

Viscosity.—Viscosity develops in cider not sufficiently rich in alcohol or tannin, or made from apples too ripe, or rotten. To cure it filter the cider through straw, and add to every hectoliter 30 grams of powdered tannin dissolved in a half liter of lukewarm water.

Darkening.—This trouble is due to improperly cleaned barrels, to the use of frozen or sour apples, and to the use of apples raised on ferruginous soil. Ordinarily 30 grams of tartaric acid, dissolved in a liter of water, added to every hectoliter is sufficient; sometimes, even, a little poiré effects the cure. In other cases more energetic remedies are necessary, viz, a kilogram of broken Spanish white and 700 grams of charcoal; the cider is agglutinated with the whites of four eggs beaten up, and is then shaken vigorously.

PRODUCTION.

The apple crop is a very variable quantity, being in some years almost double that of others. The amount of cider is naturally less variable, as that can be regulated.

The following tables show the production of cider for the years 1886 and 1887 by departments, and the average of the ten years, 1877–1886:

Department.	1886.	1887.	Average for the years 1877–1886.
	Hectoliters.	*Hectoliters.*	*Hectoliters.*
Ain	1,690	1,370	1,086
Aisne	99,542	159,606	93,614
Allier	15,252	8,567	8,113
Ardennes	31,789	35,676	62,506
Ariége	220	242	116
Aube	17,029	6,459	25,276
Aveyron	27,837	14,861	14,985
Bouches-du-Rhône	5,500	3,995	1,070
Calvados	812,440	1,840,949	1,512,563
Cantal	3,535	4,342	2,736
Charente	4,492	3,151	1,106
Cher	21,238	15,644	15,505
Corrèze	54,474	20,238	25,147
Côtes-du-Nord	774,510	950,460	907,596
Creuse	8,037	13,444	6,318
Dordogne	10,490	2,082	3,309
Doubs	.....	.....	40
Eure	668,288	952,913	775,914
Eure-et-Loire	82,129	76,569	128,462
Finistère	90,059	240,530	138,447
Ille-et-Vilaine	1,443,290	2,449,680	2,240,201
Indre	16,072	20,200	11,926
Indre-et-Loire	10,621	6,479	10,589
Isère	84	92	509
Loir-et-Cher	15,268	7,566	23,888
Loire	487	269	314
Loire (Haute)	552	408	306
Loire-Inférieure	260,442	280,000	248,695
Loiret	21,598	17,420	20,314
Lot	3,200	2,490	3,361
Maine-et-Loire	81,698	81,366	42,489
Manche	507,678	1,566,102	1,208,362
Marne	8,797	12,675	15,288
Marne (Haute)	220	200	267
Mayenne	389,260	278,095	669,648
Meuse	192	275	362
Morbihan	490,112	1,080,070	816,107
Nièvre	4,600	5,571	6,208
Nord	7,632	8,044	5,269
Oise	211,437	.....	454,908
Orne	552,853	911,301	1,074,418
Pas-de-Calais	32,043	82,952	54,512
Puy-de-Dôme	44,736	35,775	15,189
Pyrénées (Basses)	3,861	3,200	3,954
Pyrénées (Hautes)	3,957	224	3,286
Saône (Haute)	1,180	268	741
Sarthe	341,014	324,024	490,373
Savoie	4,925	6,202	3,807
Seine	595	210	343
Seine-Inférieure	669,744	1,246,914	1,020,240
Seine-et-Marne	77,079	81,337	17,014
Seine-et-Oise	132,421	122,259	130,923
Sèvres (Deux)	6,582	1,556	4,441
Somme	100,839	220,688	175,789
Tarn	575	.....	1,202
Tarn-et-Garonne	685	.....	310
Vienne	21,395	7,729	7,788
Vienne (Haute)	28,029	36,407	23,463
Yonne	50,383	22,111	72,794
Total	8,300,758	13,436,667	14,746,704

CONSUMPTION.

The consumption in cities subjected to the octroi is constantly increasing.

In Paris the consumption of wine between the years 1879 and 1884 decreased from 222 liters (1 liter=1.0262 quart) per head to 206, while that of cider increased very much. In the other octroi-paying

cities the consumption of cider increased from 18 to 38 liters per capita.

In the following nine departments, in which little or no wine is produced, the consumption of cider in 1884, in the cities collecting octroi as compared with that of 1882, was:

Department.	Consumption.		Per capita.	
	1882.	1884.	1882.	1884.
	Hectoliters.	*Hectoliters.*	*Liters.*	*Liters.*
Calvados	73,213	99,108	182	249
Côtes-du-Nord	46,841	59,961	315	402
Eure	16,513	26,515	131	212
Ille-et-Vilaine	228,153	270,837	388	448
Manche	22,081	29,460	222	290
Mayenne	61,896	78,666	220	282
Morbihan	27,023	35,275	165	216
Orne	30,898	38,984	190	244
Sarthe	62,690	104,042	127	212

EXPORTATION AND IMPORTATION.

In the custom-house reports poiré, a drink made from pears and similar to cider, and hydromel, made from water and honey, are included with cider. The export is very small, being for the year 1887 only13,312 hectoliters, valued at 532,492 francs. The custom-house valuation of cider exported in 1887 was 40 francs per hectoliter. Of this about two-thirds is exported to Saint-Pierre-et-Pèche (Newfoundland), one-fourth to England, and the remainder to other countries unclassified.

A small amount of cider is imported. In 1887 the imports of cider and poiré were:

From—	Quantity.	Value.
	Hectoliters.	*Francs.*
Germany	44	1,100
England	12	300
Spain	418	10,450
Switzerland	92	2,300
United States	24	600
Other countries	2	62
Total	592	14,812

Duty collected on the above, 592 francs.

J. L. RATHBONE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Paris, December 12, 1888.

***Translation of a paper read by M. Victor Mauduite, at the Exposition of Cider, Quai d'Orsay, Paris,* 1888.**

[Inclosure 1 in Consul-General Rathbone's report.]

POMOLOGY.

Apple trees are frequently planted in cultivated ground, but oftener in pastures. Within the last few years more and more attention has been paid to apple growing, owing to the improved methods of making cider, the increased facilities for transporting it, and the falling off in the wine crop.

CHOICE OF TREES.

In order to have good cider, great care must be used in selecting the trees. Select only those which are known to produce good cider apples; and of these take only the healthiest plants. The soil should be sufficiently rich. The trees should be set far enough apart, so as not to shut out the sunlight from the ground.

History shows that cider used to be made from apples harvested from wild seedlings, growing in the forests. But the quality of the drink was thin and acid.

GROUND.

It is now generally recognized that the quality of the soil exercises a great influence upon the fruit. High, fertile soil, far from the sea winds, gives a rich, highly colored, alcoholic cider, and one that keeps well. Stony ground with a southern or southeastern exposure gives a delicate, light, palatable drink, but it does not preserve well. Wet, low ground gives a pale cider which clarifies slowly and tastes of the soil.

The trees undoubtedly flourish best in clayey-sandy soils which have a southern or southeastern trend. If the ground slopes to the west, the strong winds blow off the flowers in the spring, and make the apples fall before they are ripe in the autumn. A northern slope subjects the trees to cold blasts which alter the organs of reproduction and hinder fecundation.

FERTILIZATION.

In one of the last conferences the late M. Morière, professor of agriculture in the faculty of Caen, addressed a just reproach to our cultivators: Our farmers do not sufficiently manure their apple trees, hence their bad condition; they are brought to a premature end for want of proper nourishment.

The trees begin to bear effectively at the age of ten years, and the annual product is about 200 kilograms of fruit and 5 kilograms of leaves (a kilogram is about 2¼ pounds). Now, in calculating the quantity of azote contained in this product, at the rate of 15 grams per kilogram of leaves and 2.125 gram per kilogram of fruit, the total is 25 kilograms of azote borrowed from the soil during the fifty years that a tree generally lives.

A kilogram of ordinary manure contains 5 grams of azote; hence there are necessary 5,000 kilograms of manure, say 100 every year. Scarcely one-half of this amount is put on, even by those who give the most attention to their trees. It is because of such carelessness that our trees cease bearing and die so prematurely.

CHOICE OF FRUITS.

In some countries, such as Germany and the island of Jersey, sour apples are considered to contain the best proportion of astringent principle — which clarifies cider and gives it its piquant flavor. But in Normandy such apples are thrown aside entirely. There apples that are saccharine, perfumed, and sweet, or bitter-sweet, are considered to produce the best cider. Small apples are better than large ones, as they are more solid and possess larger proportions of the useful ingredients. In fact "Small apples, good cider," is a Norman proverb. Perfume and bitterness increase notably the hygienic qualities of the juice and render it more palatable and digestible.

The juice of apples that ripen early is generally thin and does not keep long, while that of the later-ripening varieties is rich in all the desirable qualities, especially alcohol, and keeps a long time. Between the fruits of the second and third seasons there is not much choice, but cultivators generally prefer those of the second season for the simple reason that the weather is at that portion of the year—October and November—more propitious for the operations that must be carried on.

The apples should be gathered when *just* ripe, and ought to receive careful attention, so as not to bruise them. The proper time can be told by the color of the fruit and seeds and by the odor; also, if in calm weather, some of the fruit which is neither wormy nor rotten falls to the ground. After gathering, collect the fruit in heaps and protect it from the rain and frost. Frost destroys some of the essential qualities of the apples, while alternate wetness and dryness are not conducive to the secondary ripening which the fruit should go through. In some parts of the country the apples are left in heaps until they have almost begun to decay, that is, until, without having a bad taste or odor, they are the color of dead leaves. This is done especially where the fruit has been grown on stony ground.

The fruit is divided into three groups according to the period of ripening. The first period is August–September, the second October–November, and the third December–January. Assort so as to press only fruit ripening in one period. Mix in suitable proportions the sweet and the bitter fruits. For the best cider the sweet predominates slightly.

PREPARATION OF CIDER.

Every one knows the operation of making cider, so that I shall simply mention the principal points: Harvest the apples carefully in dry weather, separate the varieties, crush only fruit that is ripe to a dot, rejecting what is rotten or frozen, and beware of moistening the pulp with water. For the best cider do not break the seeds, as the odor of the essential oil conceals the bouquet and spoils the taste. For inferior grades it is considered an advantage to have the seeds broken, and for cider to make brandy it is absolutely necessary to break them.

FERMENTATION.

When the juice is extracted put it into casks with the bungs drawn and let it ferment for several days. This first operation is called the boiling fermentation and will occupy several days. When it ceases draw the liquid into other casks, of which the bungs are also left open for at least a month. There are two reasons for doing this: First, to assist fermentation; second, to prevent the escaping carbonic-acid gas from breaking the casks. The boiling fermentation may also go on in open vats, but the process first mentioned is generally considered to be the best.

PARIS CIDER EXPOSITIONS.

[Inclosure 2 in Consul-General Rathbone's report.]

There were two simultaneous expositions of cider held in Paris this year, one of which closed on November 25, the other being still in operation. The former was international and the latter strictly national, but the majority of the exhibitors in both were French. In both the exhibit was divided into three sections, fruit, cider, and machinery. The fruit and cider of Normandy carried off most of the prizes. Outside of the Norman departments the Côtes-du-Nord received the most honor. In the former exposition the following prizes were awarded to cider made from single varieties of apples: A gold medal to cider made from the Vagnon. A silver-gilt medal to cider made from the Fréquin. A silver medal to cider made from the Riolet. A silver medal to cider made from the Petit-Doux. A bronze medal to cider made from the Marin-Oufroy.

The machinery consisted of grinding or crushing machines and presses.

Of the crushing machines that of Simon & Sons received the first prize (see cut No. 1), I. Benech the second (see cut No. 3), and Garnier & Co. the third prize (see cut No. 2). There was also exhibited another excellent machine, that of Savary & Co. (see cut No. 4).

Among the presses that of Savary & Co. received the first prize (see cut No. 5), and H. David of Orleans the second (see cut No. 6).

CRUSHING MACHINES.

This machine consists of a cylinder, furnished with several blades, which compel the apples to follow the movement of the cylinder and be crushed against a plate placed tangential to the cylinder. This plate is so arranged as to disengage itself from the cylinder in case of a stone or any other hard substance, and thus avoid breaking the machine.

The larger machines are arranged so as to be run either by horse or steam power.

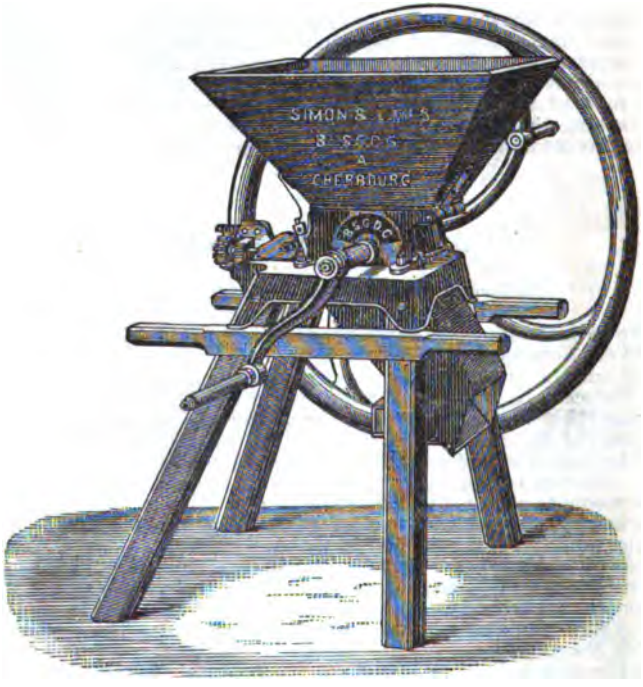


FIG. 1. Crushing machine (Simon & Sons, Cherbourg).

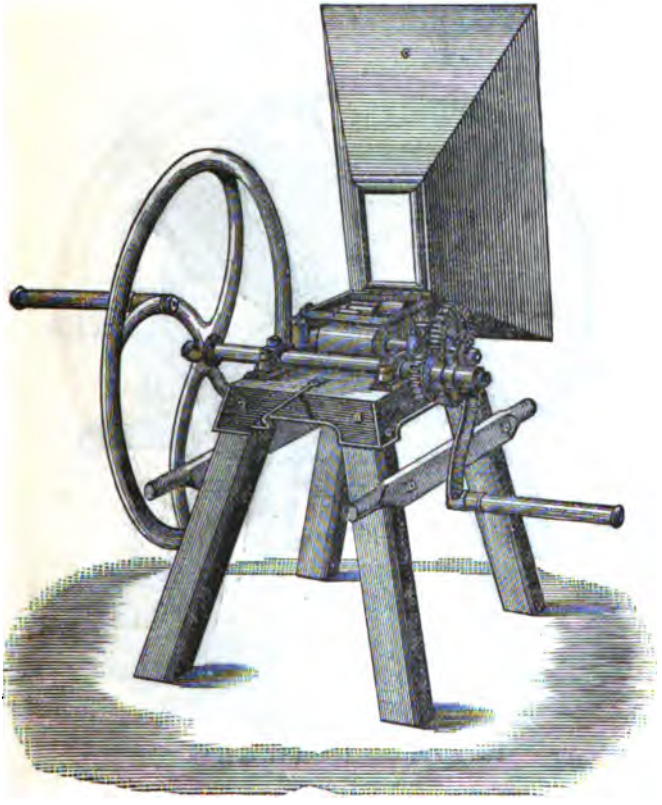


Fig. 2. Crushing machine (Garnier & Co.).

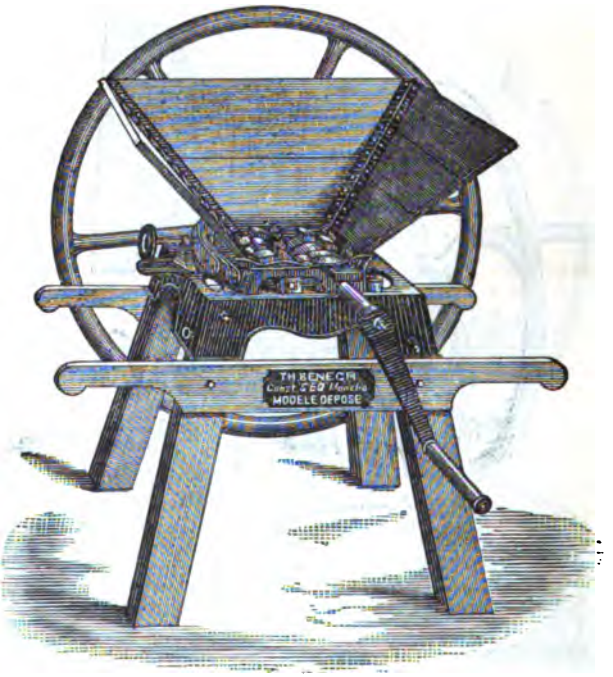


FIG. 3. Crushing machine (J. Benich).

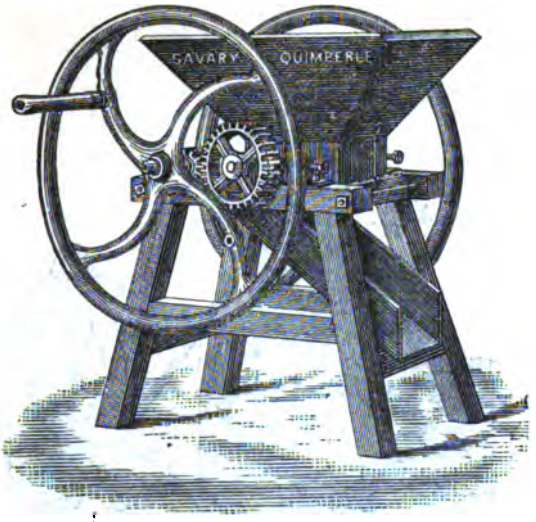


FIG. 4. Machine of Savary & Co., Quimperlé, Finistère.

FIG. 4*a*. With gearing.

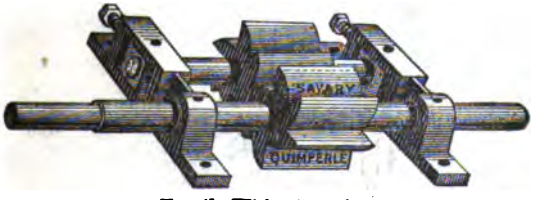


FIG. 4*b*. Without gearing.

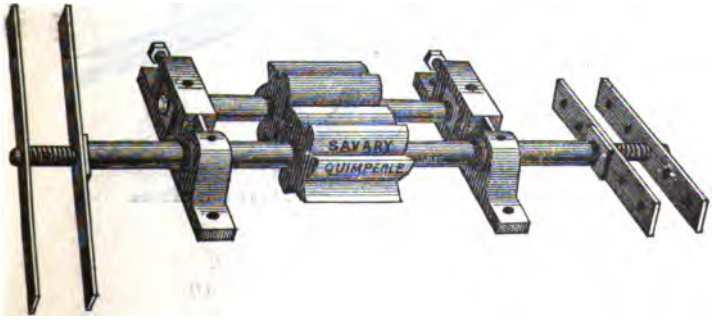


FIG. 4*c*. Ready to receive the fly-wheels.

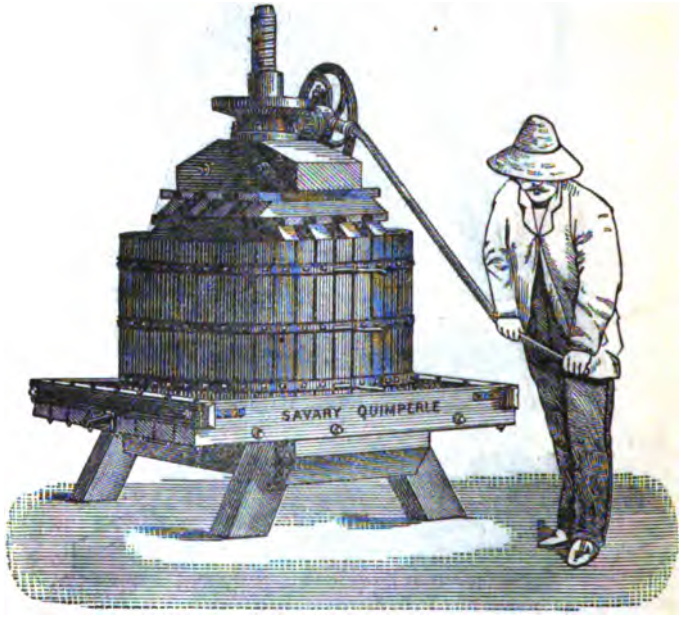


FIG. 5. The Savary Press, vertical movement.

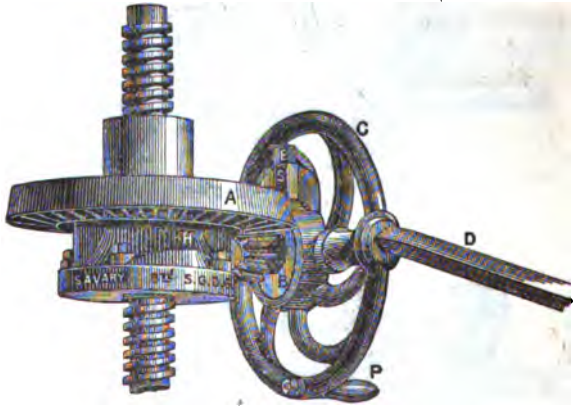


FIG. 5a. Showing the mechanism of the Savary Press.

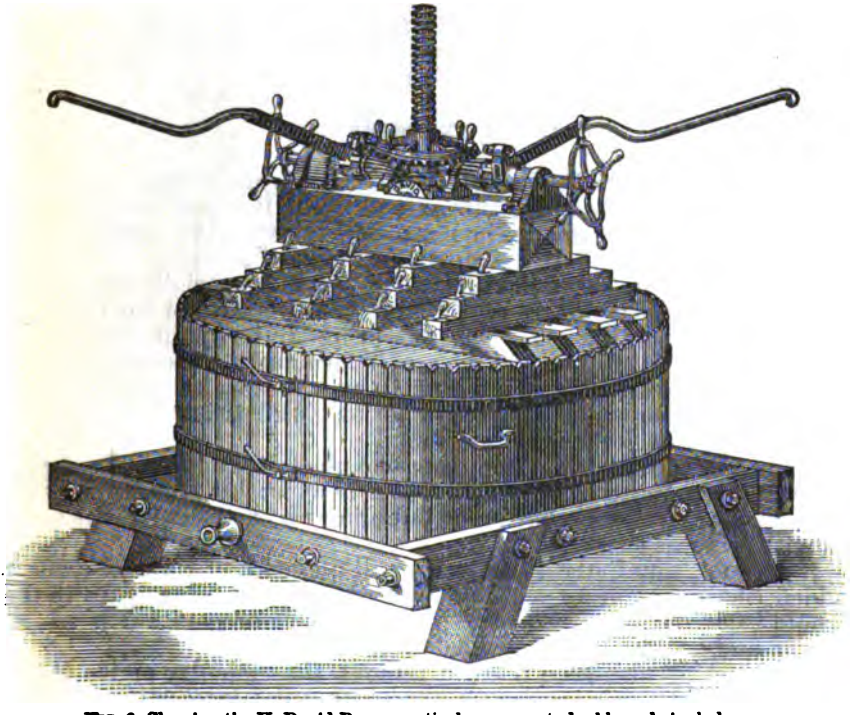


FIG. 6. Showing the H. David Press, vertical movement, double and single lever.

NORMANDY AND ALL FRANCE.

REPORT BY CONSUL DUFAIS, OF HAVRE.

The gathering of information on a subject hitherto entirely unknown to me took necessarily some time, and as the sources to which I applied could not well be hurried I am only now able to place the result of my inquiries before the Department.

For very valuable assistance I am indebted to the kindness of Mr. G. Doray, of Havre, president of the Society of Horticultural and Agricultural Sciences and administrator of the Pomological Society of the West, and to some publications, such as "Cider," by Messrs. Boutteville & Hauchecorne; "Apples of Normandy," by Mr. Lesueur; and "Culture of Cider Apples," by G. A. Belair, of which latter pamphlet I prepared a literal translation, which will be found herewith and may prove interesting.

CIDER EXPERIMENTS.

Cider is an essentially French beverage. From Normandy, where it was first made, its manufacture extended into Brittany and Picardy, and it is now being made, in more or less extensive quantities, in seventeen departments of the north and west of France.

The increase in the consumption of cider is specially due to the ravages of the phylloxera of the vine, and were it not for the difficulty of transporting cider without injury to its quality, no doubt the consumption of it would increase enormously. However, as its alcoholic fermentation continues until, by contact with the air, acetic fermentation commences, it must be kept still to let it acquire the proper condition for its preservation.

Instead of moving the cider from one place to another, the apples are being transported, but at present a new process is being written up by which the fermentation or bubbling up of the cider, the same as with wine, is suspended.

If to such manipulated cider a small quantity of natural cider is added, the dormant or suspended fermentation begins again in the whole cask. Unfortunately it loses by such process much of its aroma and acquires a taste called "cuit," or boiled.

Freezing has also been tried to remove the difficulty of its transportation, and this experiment has given quite interesting results. The aroma of the cider is not in the least interfered with, any more than its relish; the albuminous matter is precipitated thereby and its clearness enhanced.

Heat destroys the ferment, but cold, on the contrary, does not alter it. The most interesting fact, however, is that if instead of simply refrigerating the cider ice is allowed to form, the final result, after removing the ice, will be a concentrated liquor of such perfume and strength that even by using such poor apples as come from the departments of Mayenne and Brittany, a cider is obtained which for quality rivals the best.

Mr. Lavergne Lamotte says that the ice formed in wine does not retain any alcohol, and so, it is argued, it is with cider.

Another drawback to the increase of cider consumption is the difficulty of means of communication in some parts of the country; high railway tariffs and the inequality of successive yearly produc-

tion entailing considerable fluctuations in price. It is seldom that two good crops follow one another; more often a succession of bad crops happens. Besides, as there is such a great variety of apples, the cider also varies very much; nevertheless the consumption does increase and daily large shipments are made to Paris, where at present an interesting exhibition of apples, cider, and machinery relating to cider manufacture is being held under the patronage of the minister of agriculture.

PRODUCTION.

The herewith inclosed statement gives the apple crop and cider production in the most important departments for the years 1885, 1886, and 1887, taken from official sources. The total of France for 1887 is not yet published, but the minister of agriculture had the kindness to send me the figures for the departments specified in advance of publication.

From this statement it will appear how much the product of one year varies from that of another, thus illustrating what is stated above. In some departments the apple crop is of the utmost importance to the farmer; great sacrifices have been made by him to plant apple trees and extend orchards. High prices have attracted large importations (from January 1 to November 15, 1888, not less than 10,558 tons passed through Belfort from Germany, Austria, and Switzerland), so that the levying of an import duty of 1.50 francs per 100 kilograms (or 30 cents per 220 pounds) has been proposed, but the committee to which the Chambers referred the question has refused to recommend it.

Cider apples may be divided into three classes—sweet, bitter, and sour apples. Bitter varieties generally produce the best cider; after those come the sweet; but without mixing them the sour apples alone would make a cider too acid to please the taste. If they are mixed they make a more palatable beverage, and the clarification of the must is facilitated thereby, which with sweet cider sometimes take a long time.

The Pomological Society of the West of France has attracted a lively interest amongst farmers to the manufacture of cider and apple-jack, by means of disseminating knowledge, and of yearly exhibitions in one or another of the principal centers. Every detail concerning the merits of each variety of apples is closely examined, and a good many varieties have been rejected, whilst ever so many more remain. Mr. Belair's pamphlet gives a list of those most to be recommended.

PROCESSES OF MANUFACTURE.

As to the manufacture of cider it is almost impossible to eradicate antiquated customs amongst farmers. Wooden or stone circular troughs, in which the apples are crushed by means of a wheel, moved either by hand or a horse, are still numerous. To prevent the pips from being crushed with the apples, which would infuse a sort of mucilage into the must, hurtful to the clarifying and preserving process, a wooden wheel is used, which, however, does not crush the apples sufficiently. A remedy for such mucilage is to grind a few pears along with the apples, which produce a clear, pale, and somewhat sugared juice.

Another and newer process, now generally being adopted, is to pass the apples through a mill, in which they are ground up between two cast-iron crushers, revolving in an inverted ratio, a wood-cut of which, in illustration, is herewith transmitted. (Inclosure No. 2.)* The smaller mills are moved by hand; the larger ones by horse-power.

A certain precaution, however, is necessary to prevent any stones from getting into the crushers. To save the work of picking out the stones by hand a Mr. Benech, of Saint-Lô (Manche), has invented a machine, provided with spikes, which takes up the apples and puts them into the receptacle from which they pass into the crusher.

Presses are of two kinds. One consists of a screw inserted vertically into a square platform, made of strong wood, surrounded by a rim and having a spout to drain the receptacle of the juice. On this platform the apples, after being ground up, are spread in several layers, each of about 4 inches thickness, and each layer separated from the one above by a thin bed of straw. They are then covered with a thick, solid wooden cover, through which the screw is passing, and then, being screwed down on the layers, the juice is expressed.

This, however, is an antiquated process, and, as Mr. Belair describes it, gives not only an insufficient pressure, but the straw somewhat spoils the taste of the cider.

The other process is to put the pulp into vats made of staves, with narrow interstices between each of them. In these the cider is pressed as illustrated by the accompanying wood-cut, No. 3.*

The press of Mr. Piquet, of Sartrouville, received a gold medal at the last pomological exhibition. Another one to be recommended is the Samain press of Blois. The illustration represents the Mabille system mentioned by Mr. Belair.

After being pressed, the juice passes through a sieve to separate it from the residue, and then is put into large hogsheads of from 300 to 325 gallons, after they have first been cleaned by men entering them through a man-hole. The joints of the staves have to be carefully pointed with melted tallow. The hole is then closed with a linen cloth and the juice left to a boiling fermentation. This over, the hogshead is tightly closed and the drawing off left for a later period.

Cider keeps better in large hogsheads than in small barrels. Casks having had oil in them are sometimes used, holding from 60 to 70 gallons. The little oil which may yet be left in the cask rises to the top of the liquid and forms a screen against contact with the air, which is its mortal enemy. At all events it is recommended to pour one-half of a liter or a whole liter of some non-congealing oil, such as that of sweet almonds, into the barrel. Cider preserved in this manner will keep for several years.

BOTTLING.

Generally the cider is drawn from the cask as it is required; bottled cider is considered a luxury. Cider for bottling requires certain particular qualities; the principal one is clearness, which is only to be obtained by repose and repeated drawing off. It is certain that the best of cider is rarely free from mucilage; thus whilst the lightest of Brittany and Picardy ciders are easily clarified, the

*Cuts of machines similar to Nos. 2 and 3, referred to by Consul Williams, were transmitted by Consul-General Dufais, and are reproduced with his inclosure No. 2.

heavy ciders of Calvados and Manche only clarify with difficulty, unless a small quantity of pear cider be added.

For bottled cider only the pure juice is used, but the sale of such is merely a trifle compared with the great bulk of common cider which forms the every-day drink of the Norman and Breton people. So-called "boisson," which is the result of the second and third pressures mixed together after the pure juice has been extracted by the first pressure, and every time diluted with their own weight of water, is sold for 2 cents the liter (4 liters to the gallon) and drank instead of water by the poorest class of people. The first and second pressures mixed make the family table cider.

To make champagne cider the apples pass through the grinding machine even before they are quite ripe; the pulp must not be left exposed to the air, to prevent its reddening the juice, and then must be powerfully compressed; the juice clarifies rapidly and remains very pale; it is then drawn off as soon as possible, and from 6 to 8 grams (93 to 123 grains) of white sugar candy made into sirup are added to the bottle of juice, giving the liquid a pungent taste by producing carbonic-acid gas, which tries to escape by foaming, and is so palatable.

Cider must not be bottled too soon; generally cider made in December is bottled in March. The bottles must be carefully watched to prevent breakage; some little room must be left in them for the carbonic-acid gas to accumulate, which by its own pressure permeates the liquid. For some length of time the bottles must be kept upright, and the cellar where they are stored must be cool.

The process of making cider by diffusion, invented by Mr. Charles Fossier, of Ham, which is also adapted to the extraction of sugar from beet-root, has been applied to extract cider from chopped-up apples. They are put into an exhausting apparatus composed of a battery of twelve vats, each holding about 10 hectoliters,* and all communicating with each other by means of tubular conductors so arranged that the liquid with its saccharine matter passes successively through each one of these vats, thus saving the whole of the juice contained in the apples until the residuum has not the slightest taste any more.

Mr. Lehman, of Havre, acting as agent for Mr. Michael Doyle, of Rochester (State of New York), lately visited Mr. Fossier at Ham, to make himself acquainted with the process. It was before the cider-making season opened and he could thus not see the apparatus in operation, nor did Mr. Fossier consent to fully explain his process nor to furnish drawings. He wants to sell the apparatus for about $2,000, when he will furnish full explanations. He guaranties, however, to make a minimum of 95 kilograms of juice out of 100 kilograms of apples of a density of 7 per cent. alcohol.

The process certainly saves all the juice contained in the apples, reduces the expenses to a minimum, and makes a cider much superior to any obtained by the old methods. There is scarcely any deposit and what there is can easily be separated. Scarcely 2 liters of muddy cider are to be found in a cask of from 1,400 to 1,500 liters instead of 30 to 40 liters by the old process. The cider is said to be eminently fit for bottling.

Contrary to the judgment passed upon it by Mr. Belair, this process is considered to be the process of the future, certainly for large establishments.

* 1 hectoliter=26,417 gallons.

THE RESIDUUM.

The residue of the apples may be divided into two categories; into rich and exhausted.

Rich residuum is used for feeding cattle and hogs in Brittany; animals are very fond of it, but it is debilitating and produces diarrhea. Scarcely a fifth of their nourishment should consist of it; it must be quite fresh or well preserved, otherwise it is said to produce miscarriage and is apt to give cow-milk a queer taste. Probably the best use to make of it is for manuring purposes, mixed with 20 to 25 per cent. of lime, or better yet, with fossil phosphates reduced to powder. If this manure were used for apple orchards, it would no doubt greatly increase their fertility. Most of the cider manufacturers throw their residuum away as useless.

AMERICAN EVAPORATED CIDER APPLES.

I must yet observe that as apples do not keep over winter, every year's crop passes into consumption. The latest grinding is in March, as few apples keep even so long. To make cider hold out until the new crop of apples appears in October, some evaporated apples are yearly imported from the United States. Last year the arrivals at Havre were 9,956 barrels of about 200 pounds each. This year they promise to be larger, the importations up to the 2d of December having amounted to 15,198 barrels. These evaporated apples consist of very small pieces, which are simply soaked in more or less water, drawn off, mixed with some old cider and passed into consumption, principally to bridge over the seasons.

The price of American evaporated apples in this market at present is from 33 to 35 francs per 100 kilograms, or from 3 to $3\frac{1}{8}$ cents per pound.

Normandy apples sell at from 4.40 to 4.80 francs per hectoliter in this market, or 85 to 93 cents for 117 to 121 pounds.

I also beg to inclose translation of the reports of Mr. Raymond Moulton, of St. Malo, and of Mr. Emil Postel, of Cherbourg, the consular agents at those respective ports.

F. F. DUFAIS,
Consul.

CONSULATE OF THE UNITED STATES,
Havre, December 5, 1888.

NANTES.

REPORT BY CONSUL SHACKELFORD.

In the vicinity of the city of Nantes but few apples are cultivated except for the table, and the limited quantity of cider consumed comes from central and northern Brittany, where it takes the place as a beverage of the *vin ordinaire* of middle and southern France. The cider served at the hotels without extra charge is by no means a palatable drink, though much liked by the people of the country. A better article can always be had by paying more for it; which is carefully prepared from sweet apples for family use, and is an excellent summer drink. The cost of a barrel containing three hundred bottles, including the octroi duty, bottling, and wiring, is $16, or $5\frac{1}{2}$ cents per bottle.

There is no land set apart exclusively for the cultivation of apples, but on almost all farms, even where other crops are grown, apple trees are found. Nearly all the different varieties are cultivated by the farmers, and are used by them for cider when they can not be more profitably disposed of. Among them are the following: Fréquin-de-Chartres, Noire-de-Vitry, Gros-Doux, Aigrain-Noir, Aigrain-Rouge, Bouleille—of these the trees are very vigorous and the fruit of excellent quality; Louis-Desquétz, flavor bitter, soil fertile, light, and stony; Pomme-de-Normandie, flavor sweet, soil fertile, light; Gros-Gros, flavor sweet, soil dry and stony; Moyen-Gros, flavor sweet, soil dry and stony; Gros-Précynin Rayé, flavor bitter, soil dry and stony; Barbarie, flavor sweet, soil very fertile; Petit-Fréquin-Rouge, flavor bitter, soil light and stony; Petit-Rouge, Chevalier, and Grisette.

In the country districts the farmers still follow the primitive system of putting the apples in a circular trough and crushing them by means of a wheel set in motion by a horse, or a crank turned by hand.

In the island of Jersey, which is celebrated for its cider, the apples after being crushed are put into a tank, and left for twenty-four hours before being put into the press, thus, as is supposed, improving the quality of the cider.

As far as can be ascertained but little cider is exported; but experiments have been made, and cider in barrels sent to Tonquin and South America stood the test perfectly, returning in good condition, and it is believed that it will be quite possible to export it.

In order to produce good cider great care must be exercised in properly combining the different varieties of apples. When necessary, sugar is added.

H. A. SHACKELFORD,
Consul.

CONSULATE OF THE UNITED STATES,
Nantes, December 13, 1888.

NORMANDY.

REPORT BY CONSUL WILLIAMS, OF ROUEN.

Apples are spontaneous in their growth in the temperate zone of Europe. In France they have been found growing wild, especially in the moist and deep soils of mountain forests; thence they have been removed, cultivated, and grafted upon, until hundreds of varieties have been produced.

The exact time and manner in which this work has been accomplished have given rise to much controversy, but is of no importance other than as a matter of history.

Apples are cultivated in from 45° to 60° of north latitude throughout Europe. Cider apples are cultivated in fifty-five departments of France, but chiefly in Normandy and Brittany.

Orchards thrive in those regions where grapes ripen under difficulties. In the south of France they yield a fruit rich in saccharine matter, but devoid of acid, and which keeps for a short time only. In seven departments adjoining and including the department of the Seine-Inférieure, the cider manufactured is worth about 80,000,000 francs, and excepting seven other departments, the entire product of the remaining seventy-two departments is less than 100,000 hectoliters. (One hectoliter=26.417 gallons.)

The average annual production of cider for a period of ten years is about 11,200,000 hectoliters, at an average price of 10 francs per hectoliter; this gives an approximate value of 112,000,000 francs.

All of the land products of France (mines and quarries excepted) amount to about 10,000,000,000 francs; cider therefore represents more than a hundredth part of the agricultural wealth of the country. Since the phylloxera has ravaged the country the annual production of wine has been reduced to about 30,000,000 hectoliters, whereas in a good year, such as 1875, the yield was 80,000,000 hectoliters. In 1887, the yield was about 29,000,000 hectoliters. Estimating the yield at 30,000,000 hectoliters, and 50 francs the value per hectoliter, the sum produced (1,500,000,000 francs) is but little more than ten times the amount received from cider, and in volume about two and one-half times as much.

These figures do not include the consumption of cider by the producers and their families, which is not brought to the notice of the fiscal agents of the Government.

PRODUCTION AND CONSUMPTION.

Alike in city and country, housekeepers of all grades, rich and poor, procuring their apples by purchase or in return for their labor, make a vast quantity of cider, after the most primitive modes, on their own premises, and the odor of cider manufacture, in its various stages, greets you at every turn in this as well as every other Norman city. Admitting that much of this cider of ordinary use is of poor quality and much diluted, it would bring up the amount of cider actually sold and consumed to 30,000,000 hectoliters or thereabouts, in my opinion, and would represent a value of more than 5 francs per hectoliter, which would add a sum of 75,000,000 to 90,000,000 francs, and would make the actual value of the annual products from the cider orchards equal to 200,000,000 francs. The average annual production of cider for a period of ten years of the departments included in this consular district is as follows:

	Hectoliters
Department of Eure	606,802
Department of Nord	12,127
Department of Pas-de-Calais	43,063
Department of Seine-Inférieure (partly in this district)	911,754
Department of Somme	160,775
Total	1,734,521

The product of cider per year is very variable, as may be seen from the following table, which also shows the export and import of cider in France for fifteen years.

Years.	Production.	Importation.	Exportation.
	Hectoliters.	*Hectoliters.*	*Hectoliters.*
1870	19,194,000	170	10,000
1871	2,128,000	127	20,000
1872	4,597,000	62	13,000
1873	13,685,000	71	9,000
1874	13,312,000	161	24,000
1875	18,257,000	163	21,000
1876	7,026,000	78	17,000
1877	13,345,090	85	16,000
1878	11,986,000	277	20,000
1879	7,788,000	1,604	21,000
1880	5,465,000	150	11,000
1881	17,122,800	2,853	8,600
1882	8,920,600	912	16,000
Average	10,975,876	539	15,800
1883	23,492,000	.....	10,000

The sale of cider in Paris has largely increased. In 1877, 48,397 hectoliters; in 1879, 56,751 hectoliters; in 1881, 56,330 hectoliters; in 1882, 117,121 hectoliters were sold.

CIDER APPLES.

Selection.—The necessity of selecting apples combining the essential qualities for making a good cider which will keep for a long time, is apparent, and the process is simplified by ascertaining what are these properties. The best apples are those which contain all of the elements for making a cider of the first quality, and should be sweet, bitter, and fragrant—sweet, because sugar, which is the chief ingredient in the fermentation, is changed into alcohol and gives the liquid its greatest value; bitter, on account of the preservative and hygienic qualities; fragrant, as affecting the taste and smell.

Chemistry has assisted in discovering by analysis the properties of the different varieties of apples. The juice of the best apples shows a density of 1067 to 1080, equivalent to 9° to 10.6° of the aerometer of Baumé, and the following are the average proportions in 1,000 parts of its composition:

Water	800.
Sugar (alcoholizable)	173.
Mucilage (soluble pectine, gum)	12.
Tannic acid or tannin	5.
Free acids (malic, lactic, etc.)	1.07
Albumen and yeast	5.
Saline particles, lime (phosphate lime)	1.75
Coloring matter, heavy and volatile oils, substances not soluble, in suspension	2.18
Total	1,000.00

Of the apples known to make inferior cider the analyses demonstrated that the same elements entered into their composition, only in different proportions, except albumen, yeast, and the salts of potash and lime, which were about alike in all; the density of the juice only indicated 1040 to 1060, about 6° to 8° Baumé, and showed an inferiority in sugar of one-third, tannin only represented .001th part instead of .004 to .006 as in the other, and the amount of mucilage fell from .0012 to .004.

The result of theory and practice is that the favorite apples for cider of France, England, Germany, and the United States do not owe their superiority to the existence of a particular element of which the inferior fruit is deprived, but that those which hold the first rank are varieties, fragrant, slightly bitter, but not sour, which unite the greatest quantity of tannin, or astringent principle, and mucilage, or unctuous principle, with the largest proportion of saccharine matter.

The aim of cider manufacturers is to obtain 12 per cent. of alcohol, and two or three hundredths of pure sugar, to produce merchantable cider of reliable quality.

Table apples have been found generally deficient in the elements essential for making good cider.

Experienced cider-makers prefer the small or moderate-sized fruit to the large, and the juice of those varieties which is found in the least quantity is preferred. Large fruit is generally fragrant and aqueous, the smaller fruit is heavy, and incloses the greater quantity of useful ingredients. It appears to me that all attempts to raise apples for table use in this section of France must be futile, and the

reason why the farmers continue such cultivation is because they know little or nothing concerning the delicious apples cultivated elsewhere.

EXCLUSIVE USE OF APPLES FOR CIDER.

Comparatively few apples are eaten, however, raw or cooked, as it is generally considered by Frenchmen that such use is wasteful and deprives the world of so much good cider. An amusing and instructive illustration of this fact occurred not long since in Paris. It was observed that large entries of apples cut into small pieces, ostensibly designed for stews or tarts, were continually noticed on the market. The French people could not understand this mode of using the fruit, and in an off-year for apples used this dried fruit with much success in cider making. The French fruiterers became very much alarmed at this mode of undermining their cider industry, as by this subterfuge, as they termed it, the Americans were introducing cider without the payment of any duties. Steps were immediately taken to place dried apples in the same category as American pork and tobacco.

CLASSIFICATION.

Cider apples are divided into three classes, according to the season of their ripening, known as follows:

First class.—The early, or precocious, ripening in August and September. These are considered inferior to the others, and apt to be affected by the spring frosts. They are useful, however, in filling a gap arising from the short crop of a previous year, and improve the old or hard cider by the introduction of a new element. Their product is a mild, less palatable cider, which does not keep well. There are notable exceptions found in this class.

Second class.—These ripen in October and November, and are held in high repute in some localities of central France.

Third class.—In this and the adjoining department the late apples, ripening in November and December, are preferred as containing more alcohol and greater preservative qualities.

A complete list of the varieties of apples recommended for cider, with an analysis of each variety, would requires more time and space than the limits of this article would permit.

Varieties.—A few of the varieties most highly appreciated by French agriculturists, on account of the richness of their juice in essential elements, shape, hardness, and for the vigor and productiveness of the trees, are herein enumerated, and painted illustrations have been made by me of some varieties, for better comparison with the fruits at home.*

Blanc Mollet.—Fruit bitter, sweet, excellent; ripens end of Septemtember or first of October. Weight of juice, 1075=10° Baumé. Contains per kilogram of juice:

	Grams.
Sugar, alcoholizable	180.
Tannin	4.61
Mucilage	9.
Acidity	1.07
Miscellaneous	5.316
Water	800.

* Painted illustrations filed in the Department.

Tree of average size, hardy and prolific, with spreading branches. A great favorite among the early fruits, containing enough sugar and tannin to produce a good cider, which keeps well.

The Railé.—Ranks well, also, among the early varieties. Has a density of 1070=9.5° Baumé. Produces well, and mixes well with other early ripening fruit. The branches of this tree are more upright than usually found in orchards. It makes an excellent boisson (cider and water of ordinary beverage).

The Reine-des-Hâtives.—Fruit, sweet, excellent (the queen of early fruits); juice (colored), density, 1092=12° Baumé. Tree blossoms the last fifteen days in April. Fruit ripens last of September or first of October. Amount, in 1,000, of—

Sugar	223.
Tannin	4.130
Mucilage	10.
Acid	1.070
Salts, etc.	6.800
Water	755.
Total	1,000.000

The richness in sugar and tannin, and the luxuriant growth and yield of this species, cause it to be much sought for.

The Jaunet-Pointu (Pointed Buttercup).—Fruit, sweet, excellent; juice, density 1075=10° Baumé. Tree healthy and vigorous; blossoms from the 15th to the 25th of April; ripens early in October. A very good early apple, of great fragrance; rich in tannin; very valuable when mixed with the other early apples, especially with those deficient in tannin. The tannin is 5.500 in the 1,000 parts.

Précoce-David (Early David).—Fruit, sweet, bitter, good; juice (colored), density 1070=9.5°. Vigorous; bears nearly every year; blossoms first week in May; ripens the last of October. Mixes well with sweet fruits and such as are deficient in tannin.

Pomme-de-Miel (Honey Apple).—Fruit, sweet, good; is not as rich in sugar as some others, but is valuable for its fragrance and good quantity of tannin—5.509 per thousandth—and mixes well with the Blanc-Mollet. Juice (colored), density 1070=9.5° Baumé.

Amer-Doux (Bitter-Sweet).—Fruit, bitter, good; juice, density 1072=9.8° Baumé. Blossoms early in May; ripens last of October. Makes a good, healthy cider, which keeps well. Fruit, containing the bitter and tannin principles equally developed, contains more sugar, but this apple makes a valuable addition to other apples ripening at the same period.

Doux-Evêque (Sweet Bishop).—Fruit, sweet, excellent; blossoms at the end of May and ripens the last of October. The tree is vigorous, yields well, and, like the Blanc-Mollet, spreads out its branches like an umbrella. This apple when used by itself is said to make a cider apt to become glutinous, but is so rich in tannin (5.179 parts) that it adds to the healthfulness of the liquid to which it is added. Extensively cultivated in Normandy.

Pomme-de-Chat (Cat Apple).—Fruit, sweet, excellent. Density of the juice, 1080=10.6° Baumé. Blossoms last of April or early in May; ripens the end of October. Very fragrant, abounding in sugar and mucilage (187 sugar and 8 of mucilage). It contains only 1.377 of tannin. Very good and useful variety.

Fréquin-Rouge (Red Firkin).—Fruit, bitter, excellent. Density of the juice, 1087=11.5° Baumé. Blossoms the middle of May;

ripens the last of November. This apple is rich in all the material for making good cider, having 205 parts of sugar, 5.887 of tannin, and 8 of mucilage. The only objection to this apple is its smallness, although the tree is vigorous and prolific.

Fréquin-Blanc (White Firkin).—Fruit, sweet, very good. Blossoms middle of May; ripens the first half of November. Density of the juice, 1079=10.5° Baumé. Sweet, fragrant, prolific; rather deficient in tannin (2.410 per 1,000).

Paradis.—Fruit, sweet, good. Density of the juice, 1075=10° Baumé. Blossoms 15th of May; ripens 1st to 15th November. This apple contains all of the essential elements for making a good cider. The tree shoots its branches upward and shades the pasture but little, but its growth is slow and its yield is small. It is valued by cultivators on account of its containing all of the requisites within itself for cider, and useful also in mixture with other apples, and more especially as imparting great fragrance.

The *Gros-Fréquin* and the *Gros-Muscadet*, ripening at the same time with the Paradis and the others of the type Fréquin, although not possessed of all their good qualities, are good cider apples.

Bénard.—Fruit, sweet, excellent. Density of the juice 1076=10.1° Baumé. Blossoms in May; ripens the last of November. Pressed by itself makes a good cider, which keeps well, and places it among the best of cider apples, although it contains a small quantity of tannin (2.066 per thousandth).

Argile-Nouvelle.—Fruit, sweet, excellent; density of the juice, 1081 to 1083=10.6°to 10.11° Baumé; blossoms the last of April, ripens the last of November; tree is hardy, prolific; most desirable cider apple.

Barbarie.—Fruit, sweet, bitter, excellent; tree vigorous, prolific; density of the juice, 1086=10.6° Baumé; blossoms the last of April, ripens last of November; contains all of the essential principles of good cider—sugar, tannin, and mucilage in good proportion—and is a comparatively large-sized apple.

Jaunet.—Fruit, sweet, very good; tree vigorous, prolific; density of the juice, 1075=10° Baumé; highly esteemed; and ripens end of November.

Maédille d'Or.—Fruit, bitter, well flavored; tree vigorous, very prolific; blossoms in June, ripens late; density, 110.2=13.2° Baumé; rich in sugar, tannin, and mucilage; ranks high in parts adapted to its culture.

Martin-Féssard.—Fruit, bitter, excellent; density of the juice, 1075 to 1082=10° to 11° Baumé; tree healthy, vigorous, productive; blossoms beginning of May, ripens end of November or 1st to 15th of December; very choice variety; possessing a more than ordinary quantity of tannin (6.955 per thousand parts); makes a very good cider, which keeps well.

Amère-de-Berthecourt.—Fruit, bitter, excellent; tree vigorous, healthy, and very productive; blossoms end of May, ripens last of November or beginning of December; density of the juice, 1078=10.3° Baumé; very desirable variety.

Rosine.—Fruit, sweet, very good; tree vigorous, productive; blossoms beginning of May, ripens the 1st to 15th of November; keeps for some time very well, as do most of the fruits which wither before decaying; density of the juice, 1083=10° Baumé; rich in all the elements for making good cider.

Écarlatine.—Fruit, sweet, very good; density, 1075=10° Baumé; very good variety of the second season; makes a first quality of cider.

Vice-Président-Heron.—Fruit, sweet, highly flavored; density of the juice, 1092=12.1° Baumé; tree prolific; blossoms 15th to 30th of May, ripens 15th to 30th of November; abounds in sugar and tannin; most desirable variety.

Bédan-des-Parts.—Fruit, sweet, bitter, excellent; tree blossoms 15th to 30th of April, ripens 1st to 15th of December; very prolific; juice, highly colored; density, 1084=11.1° Baumé; ranks among the best varieties.

The *Margotton* and the *Rouget* are good varieties.

The Argile.—Fruit slightly bitter, excellent; tree vigorous, productive, and upright branches; blossoms early in May, ripens 1st to 15th of December; juice of good color; density, 1075=10° Baumé. This apple is extensively cultivated throughout this district and is considered the best for cider. The Argile belongs to a group of cider apples called the Fréquins, which are justly esteemed as most valuable. The eye is generally on a level or projecting in this fruit, and set in a small, shallow cavity; color generally red, and striped with deeper red. To this group are attached the Fréquins, Red and Gros, the Fréquin Tardif, Rouge-Bruyère, and Fréquin Audièvre, etc.

Among the other varieties of cider apples the Belle-Cauchoise (density, 11° Baumé); the Pomme-Bramtot (density 12.5° Baumé); the Groseiller, the Filasse, the Bédan, the Pomme-Marabot, the Ambrette, the Fréquin-Barré, Binet-Rouge, Pomme-Rouge, Pomme-Delaplace, Moulin-à-vent, Or-Milicent, Galopin, Peau-de-Vache-Nouvelle, Pomme-à-Tannin, and many others possess in proper quantities all of the essential principles for making good cider.

PREPARATION OF CIDER.

The art of making good cider is very simple. Gather the apples in a dry time, and separate the different varieties and those of the different periods of ripening. Use no unripe, rotten, or frozen fruit. Let the pulp soak some hours before pressing. Let the must ferment in a covered place at a temperature of 50° to 60° Fahrenheit. Pour the liquid into clean and air-tight casks. After a few months the cider will be clear and fit for use, of a deep orange color, and can be bottled and preserved for many years.

The first process of crushing the apples is intended to divide the fruit in such a manner as to extract the juice more readily. The most approved crushers are constructed in such a manner as to slice or divide in small pieces the fruit without crushing it to pulp, in which state of half liquid it yields up its aqueous portion with much difficulty, and leaves a sediment predisposing it to turn sour.

These mills are worked by hand, horse, or steam power, and although differing from one another manifest no superiority over those used in the United States.

The question of the advisability of crushing the seeds has been much discussed, and settled by the best authorities in favor of avoiding the crushing, which is readily prevented by the improved crushers, although unavoidable in the mills formerly used. The seeds inclose a fixed oil, dormant, containing an essence identical with that of bitter almonds. This essence when diffused throughout the cider interferes with the appreciation of the bouquet of the best ciders. The pulp obtained, it is not advisable at once to undertake to extract the juice. It is preferable to expose it to the air for from twelve to fifteen hours, shoveling it over from time to time. In fact by pro-

ceeding immediately after its preparation to press the pulp, the juice becomes but slightly colored, and gives a pale cider of an undesirable tint. Nor is this all. Maceration assists the rupture of the cells, and specially modifies the mucilaginous principles, which permit the juice to flow more freely, and also assists in the formation of leaven or yeast.

The result of experiment has proved that maceration for a period of forty-eight hours benefits not only American, but also English and German apples, in fact, all table fruits, as they thus lose a third of their acid properties and gain a twentieth of saccharine principle, but this practice would not suit the French fruit in general use for cider making, as it would impede the extraction of juice and clearing of the cider.

CIDER PRESSING.

The next process in cider making is the pressing of the pulp prepared as above described.

The mode of effecting this depends upon the use to be made of the cider, whether for sale as pure cider or as boisson (cider and water).

Although much cider is manufactured by farmers and housekeepers on their premises, by far the larger portion of the cider of commerce is manufactured on a systematic scale in buildings erected for the purpose, and with the proper machinery and conveniences for obtaining the most favorable results in regard to quality and quantity. The economy of manufacture in these "cidreries," so called by the French, has given a stable character to the apple and cider market.

The cidreries obtain from the first pressure 70 to 75 per cent. of pure cider, utilize the boisson resulting from a second pressure of the pulp, and after the addition of more water a "little cider," so termed, is made, from which spirits are distilled, and the well-drained marc makes a valuable addition to the compost heap. The rude presses formerly employed gave a return of juice of about 35 per cent. of the weight of the fruit. By the aid of the best screw presses about 60 per cent. of juice, and by the hydraulic presses about 70 per cent. of juice is obtained. One thousand grams of apples contain on an average 830 grams of water and 120 grams of soluble matter; theoretically, therefore, a press should extract 950 grams of juice, or 95 per cent.

An erroneous idea has prevailed extensively, and is by no means extinct now, that in extracting more than 35 per cent. of juice from the apple, acid and unpalatable matter were pressed in. This error costs its believers the best half of their crop, as proved by the following experiment:

Three assortments of apples were taken, the Bédan, Marin-Onfroy, and the Argile, to the amount of 2,500 kilograms; the fruit prepared for the press and pressed in cloth covers produced 1,660 kilograms of juice, 67 per cent., obtained by four pressures in the proportions hereinafter indicated; and each fraction, analyzed separately, gave the following results (matter in suspense remaining in the filter, dried in the oven, by kilograms of juice):

	Grams.
First pressure	7.00
Second pressure	6.00
Third pressure	8.00
Fourth pressure	12.0

The first three parts, of 500 kilograms each, and the fourth, of 160 kilograms, showed a density of 1079 for the first and second pressures, 1080 for the third, and 1083 for the fourth. The malic and tannic acid did not appreciably vary in the four trials; the mucilage in the third was somewhat in excess over that of the others, and the sugar and fragrance were the greatest in the third and fourth.

In extracting only 35 per cent. the most aromatic and sugary portions are lost, as the third and fourth extractions are more fragrant than the previous ones, for the reason that the essential oil of apples is found immediately under the skin, and not spread throughout the fruit, which it favors by radiation.

The pulp prepared by the crusher, having stood about fifteen hours, being shoveled over several times during this interval, is then placed on the table of the press in layers of about 2 inches in thickness covered with coarse linen or hair cloth, separated from one another by strips or branches of osier, beech, or oak, freshly cut. The wood of the last two named trees gives off a certain quantity of tannin, which is conducive to the preservation of cider.

Straw employed for the purpose of drainage communicates a bad odor and essentially diminishes the quantity of juice.

After the first pressure the pulp is not completely exhausted, as the juice constitutes 95 per cent. of the weight of the fruit, and only 70 per cent. of juice has been obtained by the above-mentioned process. It is necessary to employ water to extract the remaining soluble portion, or as much of it as is practicable.

Many French farmers still adhere to the primitive style of cider making, and some are even now possessed of the idea that the water of mud-holes (designated ponds by courtesy) and the liquid drainage of the barn-yard are absolutely required to give the true aroma to the cider, and that the racking of cider is a species of nicety which does not savor of good sense.

From 20 hectoliters or 1,000 kilograms of apples, by the first pressure without water, about 700 kilograms of must of the density of 1070 i s obtained. The residue of 300 kilograms contains 200 to 250 kilograms of water and soluble matter. This residue is moistened with about the same quantity of pure water, shoveled over at intervals, and allowed to macerate thus for twelve to fifteen hours. It is then returned to the press, and produces under the second pressure at least 200 liters of juice.

The water added has dissolved the soluble substance contained in the marc and mixed itself with the juice which remained after the first pressure, and has thus formed in the mass a kind of juice of an average density of about 1035, half way between that of pure water and the juice of the first extraction, 1070. Another pressure with half of the quantity of water, that is, 100 liters, gives a hectoliter of must of a density of 1025, which can be mixed with the marc after the first pressure.

In this case the product may be thus summarized: Must of density of 1070, *654; must of density of 1035, 200; must of density of 1025, 100; total, 954 liters of juice of an average density of 1058, that is to say, containing enough sugar to furnish by a complete fermentation 7 per cent. of its volume of alcohol. Some apples of good quality will give by this treatment cider containing 6 per cent. of alcohol, beside much free sugar. In using the third juice to moisten the

*Or 700 kilograms.

marc of the first pressure, it is better to add 300 liters of water to the marc of the second pressure. This would give 300 liters of juice of a density of 1014. This, spread upon the marc of the first, would give a product of an average density of 1036. We would then have—

	Liters.
Must of density of 1070	654
Must of density of 1036	800
Must of density of 1059 to 1060	954

This liquid would contain a quantity of sugar corresponding to a proportion of about 8 per cent. of alcohol. In short, by the use of water, a cider can be obtained less rich in alcohol (but rich enough to keep it well), and about one-fourth greater in quantity.

If the juice extracted by the first pressure is less than 1070 in density, the marc is moistened with 15 liters of water to each hectoliter of apples, shoveled over after remaining in maceration for fifteen to twenty hours, and on being subjected to pressure a quantity of must is obtained equal to the quantity of water added. The juice thus obtained, instead of being mixed with the second pressure, as in the first instance, is manufactured into a household cider, termed boisson. This boisson is only fit for immediate use and contains 2 to 4 per cent. of alcohol.

CIDER MAKING BY DIFFUSION.

Another method, other than that by pressure, for extracting the juice from apples, is growing in favor.

This process, known as the extraction by diffusion, which gives such happy results in the extraction of sugar from the beet-root, has been applied to extract the soluble principles from apples. This system does not seem well adapted to the use of small farmers, but perfectly practicable in cidreries.

The primitive mode in which it was first applied is giving way to the well-directed efforts of skillful and scientific men, who are obtaining results indicative of success in the quantity of juice extracted and the economy of the process.

For my part, I feel convinced that by this mode, when some improvements and changes shall be effected in the outfit, the work will be done more thoroughly and economically than by any other process. For this reason I have described the process as I saw it, although there was room for much improvement in this cidrerie.

Making cider by diffusion depends on the principle of osmose, which is that when two liquids of different densities are separated by an animal or vegetable membrane, a current is established through the membrane tending to mix the liquids and make them of equal density. The greater the difference of density in the two liquids the more rapid the mixing.

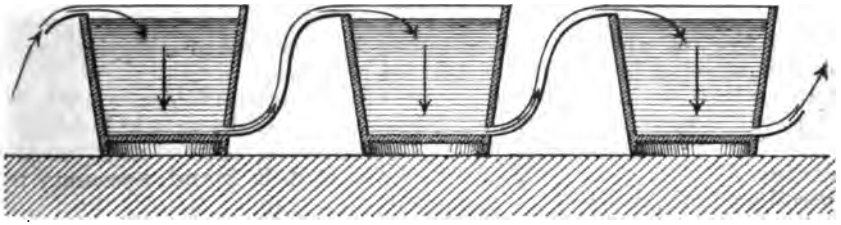
So, if apple cuttings—cut small and thin enough—are placed in a vat of pure water, equal in quantity to the juice in the cuttings, a current commences through the membrane forming the cells of the fruit, of apple juice from the one side and water from the other. After a certain time the liquid in the fruit cells and that in the vat become of equal density—that is, they become half juice and half water.

If now the liquid in the vat be placed in contact with an equal supply of fresh apple cuttings, there will, by the same principle, be again

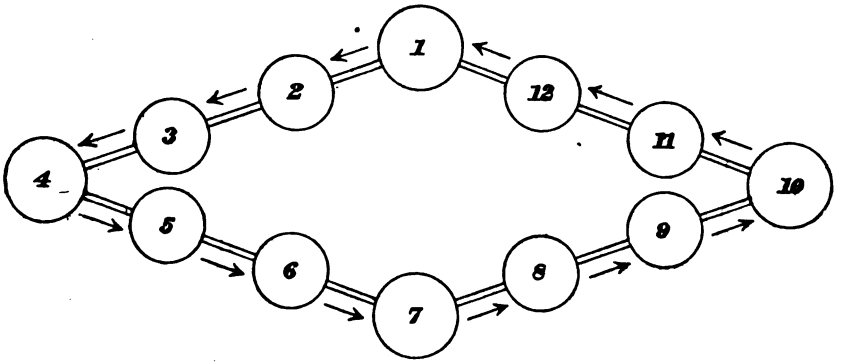
an exchange through the membrane of the fruit cells until the liquids become again of the same density—now one-fourth water and three-fourths apple juice; and if this liquid is again and again placed in contact with fresh apple cuttings, it will be seen that after a certain time the liquid will vary but little from pure apple juice.

This is the principle of making cider by diffusion.

In practice it is carried out in the following manner: Suppose twelve vats are placed in a circle and each vat connected to the following one by a tube leading from the bottom of the one to the top of the other, as in the sketch.



To begin, each vat is filled with apples cut up in small and thin pieces, as beet-root is cut up for making sugar by diffusion. Water



is then run into, say, vat No. 1; the water runs through No. 1 up to No. 2, through No. 2 up to and through No. 3, and so on to No. 11, the last of the series.

This water, in passing through the apple cuttings from No. 1 to No. 11, will contain, as explained at the commencement of the description, all the elements of the juice of the apple, and this in proportion to the quantity of apple cuttings in each vat and the number of vats. It will be clear that the apple cuttings in No. 1, from the continued passage of pure water, will have become exhausted, No. 2 less so, and No. 3 still less so, and so on to No. 11, which is the last in the series.

When a certain quantity of juice—cider—is drawn off No. 11, an equal quantity of water is poured into No. 2; and No. 1 being exhausted, is emptied and prepared for a fresh supply of apple cuttings; the juice from No. 11 is now run into No. 12; and when No. 12 is full of liquid, by running water into No. 2 and through the inter-

vening vats, and sufficient time has been allowed, cider can be drawn off No. 12 (No. 12 having been filled with fresh apple cuttings).

No. 1 has now been cleaned out and refilled with fresh apple cuttings; the liquid in No. 12 now passes into No. 1, and No. 3 becomes the first of the series. And so on, by advancing one vat at a time, drawing off the quantity of cider corresponding to a charge, emptying the exhausted vat, and adding to the series a vat of fresh apple cuttings, each vat becomes in its turn the last of the series and gives cider; and the process becomes a continuous one, which is necessary for good working.

FERMENTATION.

The juice of apples obtained either by pressure or diffusion is an insipid, sweet liquor, indigestible and laxative.

It is placed in open vats, or more often, for convenience sake, in large casks with the bung out. These tubs or casks should be placed in a cellar, where the temperature should be maintained at 12° to 15° centigrade (52° to 62° Fahrenheit), even if it is found necessary to introduce artificial heat.

After a time a certain bubbling is produced by the release of the gas, the temperature of the liquid rises, and it is said that the cider now ferments. If, in spite of these precautions, the fermentation does not proceed actively, the cider should be stirred twice a day by an osier broom introduced through the bung-hole, or a quantity of the heated must can be turned in, or some must in full activity can be added taken from another cask. It is desirable that the casks should be of oak, and large. In many cidreries which I have visited the casks have a capacity of 150 to 200 hectoliters.

During the fermentation the sweet flavor of the juice diminishes and gives place to a new flavor due to the appearance of a certain quantity of alcohol. The sugar contained in the juice, by means of a leaven (a little microscopic mushroom growth called saccharomyces) is changed into carbonic acid, which escapes, alcohol, which remains, mixed with the liquid, glycerine, and succinic acid. By analysis it is found that some sugar remains which has not been changed by fermentation. After a short time the cider becomes clear and fluid, the greater part of the dregs falling to the bottom of the cask, while another portion, by the disengagement of carbonic acid, rises and remains on the surface. This last portion, called the chapeau (cap), has enough cohesion to allow the cider to be drawn off without breaking up. The fermentation lasts in this vicinity from four to six weeks. As soon as the violent fermentation ceases, the cider is drawn off from the lees. This racking, which consists in removing the cider from one cask to another, contributes essentially to its preservation.

Some cider manufacturers recommend that when this racking takes place the cider made from the apples of the first season should be then mixed with those of the second and third seasons. This mixture increases the value of the cider made from the apples of the first season and diminishes the alcoholic strength of the cider made from the apples of the third season, which is often too strong to be drank without adding water. The cider thus obtained ordinarily is of greater commercial value.

In order to obtain a good clarification it is necessary immediately after racking to proceed to fining. The fining of cider is effected by different materials than those used for wine.

Wine in fact clears itself when the white of an egg well beaten is put into the cask. The albumen of the egg combines with the tannin of the wine to form an insoluble product which, in settling, precipitates all of the other particles which make the liquid riley.

Cider, on the contrary, contains so much albuminous matter that the inherent tannin is often insufficient to precipitate it; therefore it is clarified by adding a certain quantity of tannin in the form of cachou (a substance extracted from the fruit of the *Mimosa catechu*). Sixty grams of cachou per hectoliter, to clarify, are dissolved in a liter of cold cider and poured into the cask and mixed well through it. Tannin thus introduced precipitates the albuminous matter, and leaves the clear cider, which does not change color by exposure to the air.

This deficiency of tannin arises from the combination of this element with the gummy and albuminous principles of the must undergoing fermentation, and is then precipitated, forming a primary clarifying substance.

If for the cachou tannin is substituted, 10 grams of that acid are required for each hectoliter.

When the second fermentation is partially accomplished so that the escape of the carbonic acid is considerably diminished, the bung is driven and the air excluded. The cider, which marks at this time about 3° Baumé, should fill the cask nearly full, leaving an open space of not more than 1½ inches below the bung. When the casks can be depended upon they can be filled to the bung with liquid from other casks racked off at the same time and the bungs then driven.

At the end of twenty-four hours, and without admitting any air, the liquid is drawn off to the amount of about 3 or 4 per cent. of the contents of the cask; this is done at intervals, if the want of vent prevents the full issue at once. This space supplies room enough for the gas which can arise in any subsequent fermentation, and assures the reservation of a sufficient quantity of carbonic acid to prevent the entry of air, and dissolve in the cider and give to it that piquancy which is so desirable.

After this there need be no solicitude, and the progress of the last act of fermentation can be noted, as the cider gradually becomes alcoholic, lively, palatable and pure. The cider made at the end of the summer is drinkable after four months, that made in the autumn in four to six months, and that made in winter after six to ten months. To prevent the cider in casks partly emptied from acidifying, a small quantity of olive or rape-seed oil is passed into the casks in the proportion of 2 liters for each 15 hectoliters.

Ordinary cider only keeps from twelve to twenty months. Cider unadulterated and carefully prepared in the manner above mentioned will keep in the wood for three or four years.

BOTTLING.

The bottling of cider not only preserves it but offers a convenient mode for retailers to handle it, and is increasing each year.

Among the laboring classes here bottled cider is termed Normandy champagne. Thus preserved it acquires a fine color, a pleasant flavor, and becomes clear and sparkling.

Cider can be bottled at three distinct periods; but never should be

bottled until the active fermentation has ceased and the liquor is clarified.

First period.—At the end of the violent fermentation the cider still contains sugar; its fermentation continues in the bottles, and after some weeks produces a quantity of carbonic acid gas. It is therefore necessary, as a precautionary measure against the breaking of bottles, to use champagne bottles or stone jugs, and to stand them on end until the month of July—that is to say, until such time as the release of gas diminishes. If the bottles were kept longer in this position, the cider would cease to be sparkling. This sparkling cider will keep several years, but it requires some time before it is fit to drink.

Second period.—When the finishing fermentation is in process and advanced to that period when the cider becomes pungent (after about six weeks, not more than two months), the bottles used for mineral waters are then strong enough to hold it, for less carbonic acid gas is released than at the first period. The bottles are left a few weeks only on end. This cider is pungent, fit to drink much sooner, is rich in alcohol, and can be kept for almost any length of time.

Third period.—When the fermentation is complete or nearly so, any kind of bottle can be used, as much less carbonic acid gas is given off than at the other periods. These bottles should be immediately laid on their side to retain the little carbonic acid gas which is produced. This cider is not sparkling; it is bright, strong, lusty, and is much used as an ordinary table beverage. This cider can not be preserved as long as that of the second period, which latter, it is claimed, keeps well for twenty to twenty-five years.

STORE-HOUSES AND CELLARS.

In visiting cidreries the care taken in the selection of the sites, and the preparation of the store-houses and cellars, gave evidence of their importance in connection with the successful manufacture of cider. The store-house was intended to store the cider until sold, and was generally located on a level with the ground, and was built with a view of keeping the cider for a limited time, and supplied the place of cellars in places where the soil is damp. A good store-house should be free from dampness, its temperature not below the freezing point in winter, and cool in summer. The construction should be slightly below the surface, exposed to the north, surrounded by thick walls, and dimly lighted.

The cellar for preserving the cider was usually vaulted and built below the surface of the earth, and was kept at a uniform temperature of about 54° Fahrenheit. This uniformity of temperature favors the cessation of fermentation, and this discontinuance assists clarification.

The cellars should be about 4 meters (13 to 14 feet) below the surface, arched in masonry, and having a door opening to the north. The atmosphere should be dry rather than moist, and no water should trickle down the walls.

When the humidity is excessive the casks rot and have a musty odor which they give to the cider.

If the temperature is too high the staves of the casks shrink and the liquid effuses.

To prevent humidity the cellar should be excavated in a dry soil, impenetrable to water. If such can not be found the outer sides of the walls should be laid in water-lime.

Arrangements are required for easily renewing the air to take away the excess of moisture. This is usually done by opening the air-holes in spring and autumn.

The cellar should have a door opening to the north, and should be free from all motions caused by trains, heavy carts, etc., passing over or too near to it, for this agitation disturbs the liquid and prevents its settling and remaining at rest. No fruits, vegetables, or other substances subject to decay should be placed in this cellar, as these articles fermenting release gases which vitiate the air.

ORCHARD CULTIVATION.

Apple trees are not usually cultivated on lands of the best quality, which are generally devoted to the cultivation of grain. The tree is not very particular in regard to the nature of the soil, although it does not thrive well on land which is very clayey, very calcareous, or very sandy. In argillaceous, compact, and humid soils, the fruit produces a poor cider, which turns black when exposed to the air; in very calcareous soil, the cider obtained has the taste of the soil and sours quickly; in sandy soils subject to drought the cider is clear and very acid. The land upon which the trees grow which produce the best-flavored cider, and that which can be preserved for the longest time, is known under the term of argillaceous sandy soil. The growth of apple trees on the pasture and meadow lands of Normandy and throughout the north and northwest portions of France is extending each year, although different opinions prevail upon the effect produced upon the herbage by being too much shaded. An effort has been made, with some success, to train the trees upwards and select those varieties of which the branches are not inclined to spread out and droop.

The pecuniary advantage of planting trees on grass lands is so great as to compensate for all deficiencies of growth of herbage, and can be readily demonstrated, as follows: The cost of planting an orchard depends upon the price of trees, the size of the holes dug, the quantity of manure used, and the expenditure for protecting the young trees from injury. Supposing, what is unquestionable, that the product of a pasture covers the expenses inherent to its rent and maintenance, the profit arising from planting apple trees upon the same per hectare can be approximately obtained. The total of the expenses of setting out an orchard of eighty young trees, sufficient to cover a hectare (2⅜ acres) of land, amounts to from 560 to 800 francs, which may be thus itemized:

	Francs.	
Cost of young trees, eighty, at 3 and 4 francs each	240 to	320
Planting	100	150
Replacing	15	25
Iron work for protection	120	160
Manure, etc	80	120
Annual care of trees	5	25
Total	560	800

The price of 5, 6, and 7 francs, which is paid for good, well selected trees in certain localities, renders these figures only approximative.

Considering the product of the first ten years after planting as of no value, the interest of the investment must be added to the cost.

During the next five years the average annual product would be a half hectoliter per tree.

Thus the eighty apple trees, planted on a surface of a hectare of pasturage, would furnish from the tenth to the fifteenth year 40 hectoliters of apples worth 3 francs per hectoliter, or 120 francs; deducting interest of capital and annual expenses, 30 francs, leaves a profit of 90 francs. In the following years the yield will constantly increase and the profits proportionally.

The result of the yield of apples during a period of thirty years has been thus registered. The fruit was of the early, middle, and late varieties, the trees of different ages, as follows:

Trees planted from five to twenty years	40
Trees planted from twenty to fifty years	40
Trees planted from fifty to eighty years	20
Trees planted from eighty to ninety years	5
Total	105

These one hundred and five trees gave a total product of 6,491 hectoliters of apples—2 hectoliters 6 liters per tree per year; each tree from five to ninety years old yielded on an average 216 liters of apples, and each tree from twenty to eighty years old yielded on an average 307 liters of apples.

A hectare of orchard producing 200 hectoliters of apples, fixing the average price per hectoliter at 3 francs, equals 600 francs; annual care and harvesting expenses, 50 francs; actual profit arising from the sale of apples, 550 francs.

Apples have been quoted in this market for many weeks past at 7.50 francs to 9 francs per hectoliter (1 hectoliter equals 2.838 bushels). In this amount the octroi tax of 1.19 francs is included.

At the first glance a comparison of the additional profit obtained by making these apples into cider over that of selling the fruit in its natural state would show a very decided advantage in favor of the farmer adopting the former course, but the risk, cost of improved machinery, the cost of casks and cellars, etc., required in the manufacture make the venture feasible only in the hands of owners of large orchards.

The cost of manufacturing and profit from a hectare of orchard made into cider may be thus summarized: Taking 200 hectoliters of apples as the product of a hectare, and the result of the first pressure of juice at 65 per cent., we would have about 6,000 liters of pure juice. The subsequent pressure would produce 3,000 liters more, which, added to the liquid of the first pressure, would give 9,000 liters of cider, which quantity could be made from 200 hectoliters of apples of good quality.

	Francs.	
This cider would bring at least 10 francs per hectoliter		900
Deduct for expenses, harvesting apples, etc.	50	
Expense of making cider, tools, etc.	180	
		230
Profit when made into cider		670

The small farmer, nevertheless, had better confine his cider making to that for his family use.

The price of cider varies with the yield of apples. In good years that which contains 7 to 8 per cent. of alcohol brings 10 to 12 francs

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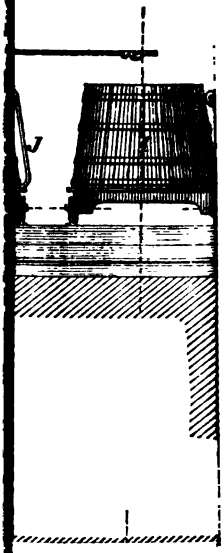


per hectoliter. In off-years the Paris retail dealers pay 18 to 20 francs and even more per hectoliter (26.417 gallons). To this price are added 11 francs for octroi duty and 3 francs for transportation.

The following are about the prices of cider in this vicinity in good and bad years, octroi duties and freight not included:

Description.	Good year.	Poor year.
	Francs.	*Francs.*
Choice cider ..... per hectoliter..	13 to 14	22
Salable cider..... do.....	12	18 to 19
Old cider..... do.....	11 to 12	18 to 20

CHAS. P. WILLIAMS,
Consul.

CONSULATE OF THE UNITED STATES,
Rouen, France, March 14, 1889.

ST. MALO.

REPORT BY CONSULAR AGENT MOULTON.

The apple product of this agency is certainly very large, but except that there are trees, I have not seen any especial culture or care bestowed thereon. The species of apples most liked here are the white and red "Fréquin" and "Chevalier," probably local names. The manufacture of cider is probably to-day as primitive as it was a century ago. The apples beaten down from the trees in October are heaped up until ripe. Every thing passes through the mill, green, ripe, and rotten ones. Near the towns the ordinary crushers are used; in the interior, stone troughs and granite wheels are yet in use. The presses are the simplest ones possible.

The pulp is put in vats of from 4 to 6 hectoliters (88 to 132 gallons), about 10 per cent. of water is added, and it is then allowed to ferment until the sugar is converted into alcohol. Very little cider is put up in bottles, hard cider being preferred.

Apples this year are worth from 100 to 110 francs per 1,000 kilograms ($19.30 to $21.35 per 2,200 pounds); cider from 30 to 36 francs per barrel of 220 liters ($5.80 to $6.95 per barrel of 48½ gallons). There is no central market for its sale.

In a report of the British consul at St. Malo of 1882, he states the export of apples to England at 2,600 tons, and British vessels have taken 4,860 hectoliters of cider. I do not believe that these figures have varied much in later years. The cider is generally consumed at home.

RAYMOND MOULTON,
Consular Agent.

CONSULAR AGENCY OF THE UNITED STATES,
St. Malo, November 25, 1888.

CHERBOURG.

REPORT BY CONSULAR AGENT POSTEL.

Cider is a drink almost universal in Normandy, a district which produces no wine, and all the departments composing this part of France have for several years past greatly extended the production of apples.

A great variety are being cultivated—sweet, bitter, and sour ones. The sweet-bitter or bitter species are generally considered as making the best cider; often sweet apples are mixed with them, but sour ones are as much as possible avoided because of the little alcohol they possess and the difficulty of preserving the liquid.

The orchards of this kind are mostly in the southern part of the department of La Manche, but especially in the department of Ille-et-Vilaine.

The quality of the cider does not depend only on the kind of apples, but also on their being more or less ripe, on the nature of the soil they come from, and the more or less intelligent care used in its preparation. Under the latter head especially there is room for great improvement, as nearly everywhere the same old process is adhered to. The apples are generally beaten from the trees with long poles, to the great detriment of the trees, knocking off a good many buds which next year would produce fruit. It would be much better to shake the trees with a hook fastened to the end of a pole, thus avoiding great injury to them.

After the apples have been beaten down they are generally left in a heap for some time to ripen sufficiently to undergo the grinding process. Most frequently a part of the apples are rotten; others are not sufficiently ripe; thus the conditions for producing good cider are bad. It would be much better to make a reasonable selection; but this idea does not seem to enter the heads of our cultivators.

Grinding.—The grinding of the fruit is most generally done in a "tour à piler," a rotary grinding in a trough of granite or wood, or by a mechanical crusher. The first has the inconvenience of requiring too much room; the work is slower in consequence of its intermission; it must be under cover, and its first cost is too heavy. It is, therefore, used only in larger establishments, and even from these it is gradually disappearing. The mechanical crusher takes more and more its place; the work is done quicker and better, and the price is not so high.

Pressing.—The same objections may be made to the "presse à mouton," a very primitive method worked between two levers; it takes much room, is very expensive and difficult to handle, whilst the presses generally used of the "Mabille" pattern, or similar ones, are moderate in price, take little room, can easily be transferred from one place to another, and give a more powerful pressure. They produce from 60 to 70 per cent. of juice, whilst the long-lever press ("presse à longue étreinte") gives only from 35 to 40 per cent. maximum. There are, however, no new contrivances of this antiquated pattern made any more; they are allowed to die out.

After the pressing of the pulp it is allowed to macerate from 12 to 24 hours, exposed to the air; it gets brown and takes part of the pulp's color; the cells of the fruit swell and burst, and the extraction of the juice becomes much more easy.

Putting in casks.—The must is put into casks which have been previously cleansed; generally a sulphur wick is burned in them. The must is then allowed to ferment a certain time until the impurities have settled, after which it is drawn into another cask. This operation is generally imperfect; the transfer from one cask to another is made without any precaution whatever, the liquid being allowed to be exposed to the air during more or less time, whilst the transfusion should take place without any exposure to the atmosphere by using a small pump or a siphon.

In many instances no transfer is ever made, many farmers sticking to the old routine, in the belief that the cider separated from its dregs does not keep as well as with it. This mistake, however, has long since been exploded, science teaching that that is the cause of the many disorders to which cider is subject.

These disorders, which often are the consequence of the bad condition of the casks, or faulty manufacture, yield easily, according to each case, to the use of tartrate of potash, sulphate of lime, sugar, or alcohol.

Bottling.—The trade in bottled cider is absolutely nil in our part of the country. The greatest part of the cider consumed is prepared for family use.

Production varies considerably from year to year. It is very rare to have two good crops in succession. On the contrary, often three or four years of very moderate or bad crops follow each other.

The year 1888 may be classed amongst the latter, with a few very rare exceptions. The price of apples in the various producing centers therefore keeps high. In good or passable years the production of the department of La Manche, generally the same as Calvados, is from one to two millions of hectoliters, almost entirely consumed in the department. A small part, however, increasing, is being exported, principally to Paris.

It is almost impossible to estimate the extent of the apple culture; it is accessory to that of grain of all sorts, grazing, etc., to increase the production of the soil. The apple trees are more or less distant from each other in the fields, according to the nature of the soil or the fancy of the cultivator.

Every year old trees are being cut down and new ones planted.

EMIL POSTEL,
Consular Agent.

CONSULAR AGENCY OF THE UNITED STATES,
Cherbourg, November 14, 1888.

CORNWALL.

REPORT OF CONSUL FOX, OF FALMOUTH.

In this county (Cornwall) cider is chiefly made from the apples that are not good enough to sell for cooking or dessert purposes. The best cider, however, is made from special sorts of apples, most of which are only locally grown. I know of one exception, an apple called "Fox Whelp," the trees being produced in Worcestershire, the apples from which make the finest cider obtainable.

The process of cider making is as follows: The apples are allowed to fall from the trees and are all gathered up about once a fortnight,

each gathering being placed in heaps by themselves, where they remain until sufficiently hoarded, which may be from two to four weeks, when they are taken to the mill, which grinds them into pulp. This may be turned by manual or other power. The pulp is then placed in layers on the vat of a screw press, each layer being wrapped together by strong, coarse cloths spread underneath, the sides and ends being folded over so as to be underneath the next layer. When a sufficient number of layers of pulp have been placed under the press the latter is applied by using a lever turning a pinion wheel, which simultaneously turns the screws. The said screws may be 7 feet long and 4 inches in diameter. By these means the cider may be all extracted in a few hours. The cider at this stage is very sweet, even though it may have been made from apples with an acid taste. It is then placed in a large cistern, where it remains for a day, or generally a few days, until fermentation has well set in, when the surface of the cider will be found to be covered with small particles of the pulp, which forms a uniform layer. This is now carefully removed, or, better still, the cider is drawn off underneath and the refuse left behind in the cistern. The cider may be allowed to go through another fermentation in the same way, or it may be placed at once in casks, where it will continue to ferment until all the "grape sugar" contained in it has been converted into alcohol. The casks are then securely stoppered down with cork.

The great point aimed at throughout is to secure cider that shall not be too acid to be palatable. This can not be attained unless the apples are fully ripe and well hoarded. Some people affirm that frequently changing the cider from one cask to another during its fermentation helps to preserve its sweetness, whilst others infuse different chemical preparations in it while it is fermenting to secure the same result.

I do not believe that any cider is exported from this country.

The price realized at present is: For ordinary kinds, £1 10*s.* per hogshead; for good, £2 per hogshead; very prime, £3 to £4 per hogshead.

HOWARD FOX,
Consul.

UNITED STATES CONSULATE,
Falmouth, November 7, 1888.

SUPPLEMENT.

MANUFACTURE AND DISEASES OF CIDER.

By G. A. BELAIR, *Paris, Bailly Library "Journal des Campagnes."*

[Translated and transmitted by Consul Dufais, of Havre.]

More than ever the question of the cultivation of the apple tree and of the making of cider gains in importance. A great number of departmental councils-general have its study under consideration, and especially the council-general of the Oise, which, after having devoted several sittings to it, formulated resolutions and took measures of wise foresight in their meeting of the 5th of May, 1888.

Cider, in fact, is more and more destined to be the exclusive beverage of persons of moderate means. Why? Because pure wine is too dear and cheap wine is not pure.

In this century of science we have dishonest and honest chemistry; they struggle with each other hand to hand; the former proceeds by synthesis, the latter by analysis; the first practices and hides fraud, the latter searches it out and, fortunately, discovers it.

Thus the laboratories of Paris inform us that in a liter of wine, at 12 cents (60 centimes), instead of wine there are, water, various kinds of spirits, sugar, cider, pear cider, glucose, gypsum, alum, tannic and various other acids, such as salicylic and tartaric acids, salts of soda and potash, glycerine, extract of bitter almonds and cherry laurel (which is prussic acid), fuchsine, logwood, etc., to be found. (In 1885 out of 16,184 analyses of alimentary produce and of various beverages, 9,223 samples, or about 60 per cent., were found to be bad or fraudulent.)

This liter of wine, at 12 cents, innocent and child-like as it looks, contains a whole litany of more or less violent poisons. Such is the wine drank by the workingman and the modest old man living upon a small income or a pension.

"Cider," says Mr. Pierre Delcourt, "is one of the least adulterated drinks;" thus even cider is being adulterated, and though it may be ever so little, it is our duty to expose it, and to say loudly what we some time ago wrote in a local journal: "Let every one make his own cider, cultivate his own apple trees, gather the fruit, and brew it himself; in fact do everything with his own hands, for as soon as commerce and trade take hold of it, fraud is sure to take place."

Now that we have sufficiently proved the importance of cider and its manufacture in every household, we will briefly state the preparation of this drink and the cultivation of the apple tree.

CULTURE OF THE APPLE TREE—CLIMATE AND SOIL.

Like every other plant, this tree has its preferences for certain soils: permeable soil, fresh soil without being too damp, clayey-silicious or silicious-clayey soil; also for certain climates: northern or Sequanian (consistently rigorous). It prefers a western or southern to an eastern exposure, where it would be exposed to rapid and always fatal thaws. Even a northern exposure is better, though only in a more southern latitude than ours.

CULTIVATION OF THE TREES.

An important question is the one of preparing the soil for the planting of the apple trees. Too frequently they are put out in the fields, in tilled soil, where every year the plow destroys a part of their best roots; thus treated they languish, if they do not die. To prevent this the trees had better be planted on pasturage, or better yet, on permanent meadows, for on pasturage ground it is necessary to have protective palings to guard against the ravages of the cattle parked out in the fields.

VARIETIES.

The trees may be classed in different ways, according to their special fruit, to the time of maturity, to the amount of sugar and tannin contained, and also as to aroma or to the time of blooming.

According to these data we have the three following kinds of classification:

I. Sweet-apple trees, bitter-apple trees, complete-apple trees. (There are also sour apples, but we do not cultivate them. The acid principle exists more or less in the sweet, bitter, or complete fruit.)

II. Early and late apple trees.

III. Trees of early and trees of late blooming.

Sweet apples are rich in sugar, bitter ones contain much tannin, but separately they would make but poor cider. By mixing two-thirds of sweet apples with one-third of bitter ones a better cider can be obtained, somewhat sweet, but not calculated to keep. By inverting the proportions a winey cider of good quality would result, and, with care, keep a long time.

The varieties of complete fruit like Blanc-Mollet, Marin-Onfroy, Railé, Bédan, Bédan-des-Parts, etc., would by themselves make good cider. They are called complete because they contain each the three principles needed, viz, sugar, tannin, and aroma. An apple orchard should have some trees bearing early fruit, Blanc-Mollet, Jaunet-Pointu, Reine-des-Hâtives, Railé, etc. They would make an early cider, likely to fill a possible want of new beverage; but the majority of the other varieties must be composed of late apples of the second or third season.

Amongst the varieties of the second season, maturing from 15th October to 15th November, are the Gros-Fréquin, Avranches, Amer-Doux (bitter-sweet), Rouge-Bruyére, Paradis, etc.

Marin-Onfroy, Médaille d'Or, Martin-Féssard, Bramtot, Bédan, are varieties of the last or third season, but the best in every respect.

The period of blooming of the different kinds is also of great importance for the following reasons:

The blooms of the respective varieties do not all appear at the same time; if the setting of the fruit of one misses, the chance is that there will be fruit forming on other blooms favored by better atmospheric conditions.

FRUIT BEARING.

For some time past much interest has been taken in the form of the trees. The majority of our apple trees bear in the form of a vault; the trunk is short, the vertical branches bend gradually under the weight of the successive crops and present a spread-out, umbrella-shaped appearance. Such a form is often a sign of fertility.

Other trees, the least common, have a hi her trunk with upward branches called "à tête elevée" (head up). They are excellent for lining highways or pasturage, because branches and fruit are out of reach of marauders and animals.

PEAR TREES.

Pear cider has not the same properties as apple cider; the following varieties of trees, however, are preferred: Navet, Souris, Sauge.

Pear cider is heady, much like a heady white wine, very rich in alcohol, and its mixture with apple cider gives good results.

List of best apple-cider trees.

Varieties.	Quality of fruit.	Time of—		Carriage of the fruit.
		Bloom.	Maturity.	
Martin-Féssard	Bitter	During May	In December	Upward.
Argile	do	do	do	Mixed.
Rouge-Bruyère	Complete	do	In November	Do.
Paradis	Sweet	do	do	Upward.
Gros-Fréquin	Bitter	do	do	Do.
Amer-Doux	Complete	do	End October	Do.
Pomme-de-Miel	Sweet	End April	do	Do.
Blanc-Mollet	Complete	May	End September	Downward.
Jaunet-Pointu	Sweet	End April	In October	Mixed.
Railé	Complete	May	do	Very upright.
Barbarie	do	do	End November	Do.
St. Laurent	Sweet	End May	End October	Mixed.
Médaille d'Or	Complete	June	End November	Do.
Rouget	Sweet	End May	In December	Downward.
Bramtot	Complete	do	do	Upward.
Bédan	do	do	End December	Downward.
Bédan-des-Parts	do	End April	In December	Do.
Fréquin-Blanc	Sweet	End May	In November	Mixed.
Fréquin-Rouge	Bitter	do	do	Downward.
Amère-de-Berthecourt	do	do	In December	Upward.

OBSERVATIONS ON AMOUNT OF FRUIT.

At the last pomological congress at Havre, Mr. Cruelle stated that in fruit from the same tree the maximum richness of sugar is not to be found either in the smallest or in the largest sized fruit, but only in the medium. This does not mean that the fruit naturally small is poor in sugar; the analysis of Mr. Hauchecorne proves the contrary. Thus the Médaille d'Or, an apple which is always small, contains 23 per cent. of sugar; the red Fréquin, 20 per cent.; whilst the medium-sized Martin-Fés-sard, Pomme-de-Miel, and Railé give 17, 16½, and 16 1/10 of saccharine matter.

PLANTING TIME.

The planting of cider-apple trees should be made with the same care as our fruit trees in the garden. Early planting in November, in a deep and well manured soil, are two essential conditions for a good start. To plant in spring is to expose the tree to sunstroke, and to put it in not well prepared soil is to put it in swaddling-clothes too small either to benefit it or to make it bear fruit.

Spring planting is only allowable in very damp soil or in soil submerged during the winter.

Several cultivators recommend, and not without reason, the planting of so-called "Engrain" trees, which, at the end of one or two years, they graft with other approved varieties.

At the various congresses of the Pomological Society of the West, grafting has always been recommended in order to obtain straighter and higher branches, so as to give vigor to naturally weak varieties.

DISTANCE.

The distance to be observed between the trees varies, especially according to the quality of the soil. On fertile soil the plants are at a distance of 36 to 45 feet; on medium soil 24 to 27 feet. The planting in checker-board style, "en quinconce," is the best.

CUTTING.

The apple tree does not bear the cutting of its branches well. It is better, after planting, for several years only to shorten the first shoots, in order to strengthen them, and to let them fork out naturally; the top should not be cut.

After four or five years the tree is not to be cut any more; it is only cleaned out from time to time. The tree once old, the bark is cleared of lichens and of dead parts, which hide insects and mistletoe, etc. All this stuff is then burned on the spot, and the trunk, thus cleaned, is painted with milk of lime.

MANURING.

Apple trees, during their growing period, need manuring, in which potash and azote predominate, such as stable dung, wood ashes, etc. Later on, when blooms and fruit may be expected, they need azote-phosphates. These phosphates have not only the property of promoting the formation of sugar in the fruit (as in raisins, pears, etc.), but also of entering largely into the chemical composition of the fructifying element and of the pollen of the blooms.

Admitting this fact, it may be said that in a soil which is poor in phosphates, when a tree after blooming well does not fructify, the reason is that these blooms are sterile and that they do not contain any pollen, and that the pollen does not exist because the tree has been deprived of phosphorus, which is one of the principal fructifying elements. We admit that in this case of sterility the tree has bloomed; but the same cause, namely, the absence of phosphorus in the soil, coinciding with an abundance of potash and azote, can produce other immediate effects which may have the same final results. We mean to say that it is possible that when the absence of phosphorus in the soil coincides with a great abundance of potash, and azote, there may even be no blooms; the sterility, then, appears in a yet more conspicuous manner.

The grown apple tree should, therefore, have manure the dominant part of which is azote and phosphorus; chemical composts may, in this case, be employed with success.

If, for instance, chemical manure only is to be used, we recommend during the growing period the use of the manure No. 4 of George Ville.

In 100 kilograms (220 pounds) the following raw and assimilating substances are used:

Formula.

	Kilos.	Lbs.	Oz.
Sulphate of ammonia	4.400 =	9	12
Superphosphate of lime	33.340 =	73	9
Nitrate of potash	16 =	35	5
Sulphate of lime	46 =	101	6
	100	220	

Assimilating substances.

	Kilos.	Lbs.	Oz.
Azote	3 =	6	1
Phosphoric acid	5 =	11	1
Potash	7 =	15	3
Lime	27 =	59	9

When the trees have reached their full growth, manure No. 3, in which phosphoric acid predominates, should be used,

Formula for 100 kilograms.

	Kilos.	Lbs.	Oz.
Sulphate of ammonia	12.615 =	27	12
Superphosphate of lime	40 =	88	
Azotate of potash	11.365 =	25	
Sulphate of lime	36.020 =	79	4
	100	220	

Assimilating substances.

	Kilos.	Lbs.	Oz.
Azote	4 =	8	12
Phosphoric acid	6 =	13	
Potash	5 =	11	
Lime	24 =	52	12

This manure has its homologues, in which, in the place of sulphate of ammonia and nitrate of potash, a corresponding quantity of nitrate of soda or chlorure of potassium is substituted. These homologues are generally cheaper than the typical manures.

DOSE.

Mr. George Ville recommends the use of these manures in the ratio of 800 (1,960 pounds to 1,000 (2,200 pounds) kilograms per hectare,* or 795 to 890 pounds per acre or 80 to 100 grams (3 ounces to 3½ ounces) per square meter (or 2½ to 3½ ounces per square yard), which the roots of a tree generally take up. A grown tree, supposed to take its nourishment in a space of 4 superficial square meters (4¾ yards), receives in autumn 320 to 400 grams (11¼ to 14 ounces) or 2½ to 3½ ounces per square yard, equally spread over this surface, which with little labor is worked into the soil. This dose should be repeated every two years.

Before using the residue of cider apples, their acidity should be neutralized by adding one-fifth of lime or calcareous earth.

MATURITY—CROP.

Apples are ripe when they fall of themselves, though remaining otherwise thoroughly sound; when they get yellow and perfumed; and when, being cut, they show black kernels.

When gathering them make a bed of straw under the trees; shake the branches with the hand or with a hook. The beating them down with a pole is a disastrous operation, which knocks off as many buds for the next year as apples. Late apples of the second or third season are housed before frost sets in, and are put in layers of at most 60 centimeters (23 inches) thickness. They should be ripe before grinding them. Rain or any other water must be kept off the fruit, as it would lose the greater part of its sugar by endosmose, or the impregnation of the cells with water.

*1 hectare = 2.47 acres.

MANUFACTURE OF CIDER AND CHOICE OF FRUIT.

Apples intended for cider making must be ripe; neither half rotten nor green apples will do. The former have lost more than 3 per cent. of sugar; green ones lack 5 to 6 per cent. of the 11 per cent. which, at least, they ought to contain when in a state of perfect maturity.

If the apples do not belong to the variety of "complete" they must be mixed with another variety, possessing the quality which the others lack. For example: We have 100 kilograms of sweet Paradis to make good cider with, such as will keep. They should be mixed with 200 kilograms of bitter Gros-Fréquin, or others ripening at the same time with the Paradis.

The proportion of one-third of sweet apples to two-thirds of bitter ones is the best to make cider for preservation. By mixing on the contrary, one-third bitter to two-thirds sweet apples, a sweet cider for immediate consumption will be the result, but it will not keep.

PREPARATION, CRUSHING, AND MACERATION.

The apples having been selected, they are immediately ground to produce the coloring of the cider and to make its extraction easier. We will pass by the primitive process of crushing the apples in a circular stone trough with a rolling millstone; crushing machines are being used nowadays. A cider-mill costs from 100 to 300 francs ($20 to $60), according to size and to the perfection of its machinery; it grinds from 5 to 20 hectoliters) (110 to 440 gallons) per hour.

The notched and fluted cylinders between which the apples are ground are generally of cast or other iron; they have the inconvenience of rusting and of affecting the quality and the color of the cider. It is therefore necessary to keep the cylinders of the mill strictly clean and to work it rapidly.

After crushing or grinding the apples, they are put in tubs and exposed to the air for about fifteen hours. During this time they are brewed two, three, or four times to increase the oxidation under the influence of the atmosphere, which browns the pulp and gives the cider its color.

EXTRACTION OF JUICE—PRESSING—DIFFUSIÓN.

When the pulp is sufficiently colored it is time to pass it through the press, to extract the juice.

In our own interest we should use a powerful press, so perfect as to get a maximum of from 65 to 70 per cent. of juice from the total weight. But this is not all; this instrument ought to be assisted in its work by the drainage of the pulp. The pulp is put upon the platform of the pressing machine in layers of about 10 centimeters (about 4 inches) thickness, one above the other, each layer separated by a hempen or hair cloth, or by means of small green branches, such as oak or beech, or by willow grates, previously stripped of the bark.

This sort of stratification facilitates a rapid and abundant run of the juice. The less spongy the separating material is the better; straw should not be used, as it gives a bad taste to the cider. The liquid of this first pressing is absolutely pure cider, called "mère goutte." Some day pure cider will be made which, with careful preparation, may be exported, and will keep like wine and be drank mixed with water. A pity such a result has not as yet been attained.

As made at present, the cider is "cidre mouillé" (diluted cider), and its make is as follows:

Apples contain an average of 95 per cent. of juice and other dissolvable matter; 1,000 kilograms of ground apples thus give 950 kilograms of pure cider or 95 per cent. of the total weight.

After a first pressing there remain yet in the pressed pulp 300 kilograms of juice, and there is no press powerful enough to extract this last quantity. In order to extract it recourse must be had to a substitute, namely, by mixing it with an equal quantity of water.

One thousand kilograms of apples, after the first pressing, contain, as we said, 300 kilograms additional juice. If this residuum is soaked in water (water at a temperature of 40° to 50° centigrade, or 104° to 130° Fahrenheit temperature advisable) and left macerating during twelve hours' brewing from time to time to prevent fermentation, and is after this maceration, passed again through the press, about 300 kilograms of "petit cidre" (small cider) is obtained of sufficient saccharine strength to give 3 per cent. alcohol. This small cider, mixed with the first pressing, or "mere goutte," makes the ordinary cider in use.

We will only mention in passing the extraction of the juice from the apples by diffusion, as we do not believe it is likely to replace the old process. In fact, besides its excessive slowness, it will not make pure cider, the cider of the future, without water, which is much more apt to keep than any other.

The process of diffusion consists in allowing the ground apples to macerate three times in succession (each time twenty-four hours) in their own weight of cold water.

During these repeated macerations two currents are naturally generated: one of the pure water entering into the cells of the apples, the other going from the apples into the water, communicating to it the saccharine along with the dissolved matter. After the third maceration the pulp of the fruit is devoid of sugar and drained of pure juice; the liquid contained in the cells is nothing more than water.

FERMENTATION.

The immediate result of either of the above-described processes is after all only "must," viz, a liquid more or less sugared and more or less diluted with water.

It is the alcoholic fermentation which transforms the sugar contained in the liquid into alcohol and the entire must into cider.

The best fermentation is obtained in vats and not in casks, in which the cider has no air, ferments with difficulty, and does not easily clarify. Inhabitants of Jersey, whose cider passes for being excellent, make it in vats.

These vats are in closed localities where the temperature should be kept even at 8° to 15° centigrade (46° to 59° Fahrenheit), a little above but not below.

If the must does not ferment easily, the fermentation may be hastened by brewing it vigorously or by heating a part of the liquid, which is then added to the rest, and putting some sugar or alcohol or a few liters of heated pear cider into it.

CLARIFYING AND FIRST DRAWING OFF.

The noisy fermentation, which manifests itself by a sound something like a boiler in commotion, lasts on an average five weeks. When over, the cider is clear, but it rests on a bed of dregs and is covered by a head of impure froth and light matter, forming another impurity as pernicious as the former.

These two strata, between which the cider is confined, are the most hurtful to its preservation. Under such circumstances the cider has to be drawn off between these two stratifications before the matter on the top has had time to settle through the clear cider.

The drawing off must be done in casks well cleaned, washed out and fumigated with sulphur. Casks having had spirits in them are excellent.

After this first drawing the cider will quickly ferment, but without noise; the fermentation revealing itself by an escape of carbonic-acid gas.

The casks can not be hermetically closed, and are therefore provided with a hydraulic faucet, allowing the escape of the gas, but preventing at the same time the entrance of the atmospheric air into the interior. These faucets are used for several days.

SECOND DRAWING OFF.

The second fermentation always produces a muddy sediment at the bottom of the casks, which, if left too long, spoils the best of cider. A second drawing off therefore becomes necessary.

This drawing off is done chiefly in order to separate the cider from its dregs; it has therefore to be done with the utmost care, otherwise the cider would not be clear and the whole operation become useless.

A cock or siphon should be used, and the cloudy cider must be put into a separate cask.

CLEARING AND THIRD DRAWING OFF.

It is possible, in fact it is almost always the case, that notwithstanding the cider having been drawn off twice it may yet contain some floating impurities, which can only be removed by clearing, "collage."

Cider clears with 60 grams (2¼ ounces) of cutch (cachou) per hectoliter of 22 gallons. This substance causes the albumen to precipitate, after which the cider is perfectly limpid; but it is well not to let the cider remain too long on this sediment, and to draw it off at once a third time.

To clarify cider, fish glue is also used, say 6 grams (one-quarter ounce) per hectoliter (22 gallons), first being dissolved in boiling water.

Mr. Hauchecorne repudiates, and with reason, the use of the white of the egg and gelatine, which clarify the cider at the expense of certain principles of its preservation and longevity, such as of alcohol and tannin.

Kaoline, employed in the south for clearing wine, has, according to the "Moniteur of Chemical Produce," the same drawbacks as albumen.

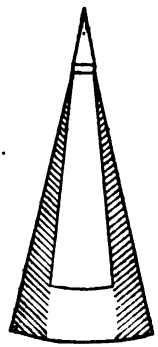
Wine cleared with kaoline, which contained 0.91 tannin before the operation, had 0.89 after the clearing process. The same wine cleared with the white of eggs kept only 0.41 tannin.

All these different manipulations which we have reviewed have the object of clarifying the cider and to clear it of floating impurities.

PRESERVATION.

Like wine, it needs for its preservation a cool cellar, without daylight; to be remote from noise, and an even temperature.

The souring and the transformation of cider into vinegar are prevented by various methods. The best is to pour a light cover of sweet, fine olive oil (one-third liter to a hectoliter, or five-eighths to three-quarters of a pint per 22 gallons) into the cask. By placing the tap first in the middle of the cask, and afterwards, when about one-half has been drawn off, at the base, good results are obtained.



Certain writers recommend the use of the hydraulic faucet or the Vinot faucet; this latter is formed by a long wooden hollow plug, with a funnel-shaped air-hole through its length, open at the top, into which some loose cotton is put in order to allow the air to penetrate and at the same time to prevent dust or any other matter from entering it, whilst keeping the alcohol from evaporating.

Cider keeps best in bottles after the second fermentation is over. The cider is then strong, alcoholic, and winey, neither sugared nor pungent. By more or less early bottling a cider is obtained more or less sparkling, but then the bottles should be securly corked. To insure good preservation great care should be taken in the clarification of the cider.

DISORDERS OF CIDER.

If cider has been made under unfavorable conditions; if rotten fruit has entered into its composition, or unclean water; if it has not enough alcohol or tannin, which are essential elements of its keeping or preservation; if too long exposed to the air, it is subject to certain disorders which according to their character are called (1) La graisse, the grease; (2) l'acidité, acidity; (3) le trouble, muddiness; (4) la couleur noire, black color.

THE GREASE.

The grease makes cider run thick like oil. If it has not the proper quantity of tannin it becomes thick. Taken at the beginning this disorder yields to an admixture of 25 grams of cutch (cachou) or of 10 grams of tannin per hectoliter of 22 gallons. A precaution is to mix the must before or during the first fermentation with a few kilograms of sugar, or, better yet, with a few liters of pear juice boiled down to the consistency of sirup.

ACIDITY.

The acid state of the cider is the result of a fermentation called "acetic," which means the transformation of the alcohol into acetic acid; the result of a simultaneous contact of atmospheric air with a mushroom-like, spongy growth called "micoderma aceti."

This micoderm, which forms on the surface of cider, takes its oxygen from the air and fixes it on the alcohol, thereby transforming it into acetic acid. But according to Pasteur those parts of the mushroom immerged in the liquid, namely, withdrawn from the contact of the atmosphere, remain inactive and neutral. This is why oil spread lightly over the cider is the best preventative against souring.

As to the Vinot faucet, if it stops the germs of the micoderm suspended in the air, it does not prevent those already existing in the cider from growing and multiplying.

Finally, let us say that the repeated drawings off and the clearing process favor the preservation of the cider only because they clear it of its impurities and germs, which are always the source of acetic or other more or less unwholesome fermentations.

MUDDINESS.

If the first fermentation has been incomplete, the cider remains muddy and dark; another fermentation has then to be produced by the addition of sugar, say 160 grams to the hectoliter of 22 gallons. If the muddy state of the cider is the consequence of a want of a noisy fermentation, it will yield to a new clearing process (collage) followed by a drawing off.

BLACK COLOR.

This disorder is often the result of the use of water-casks or other utensils which have not been sufficiently cleaned, but it may also be ascribed to the presence in the water of oxide of iron. In the latter case the normal color can be restored by adding 40 grams of tannin to 200 liters of cider. The tannin combines with the oxide of iron and forms a black precipitate at the bottom of the casks, which must be drawn off.

(P. S.—Cider is now being made in regions where, before the appearance of phylloxera, only wine was used. In 1885 cider was made in sixty departments.)

MAKING CIDER BY DIFFUSION.

[Translated and transmitted by Consul Dufais, of Havre.]

The process of diffusion, which has so advantageously replaced the hydraulic and other presses used for the manufacture of sugar, and the distillery to extract the juice of beet-root, is now being applied with no less success to extract the juice of apples for cider manufacture. This new process is the invention of Mr. Charles Fossier, of Ham, and has been explained at the congress of the Pomological Society of the West, at Le Mans, by Mr. Lechartier, the learned director of the agronomic station of Rennes.

Not to enter at too much length into the principles of this diffusion process, they are the same as for the extraction of the juice of the beet-root. It will thus be understood that the maximum product can be obtained as proved in his cider-manufacturing establishment at Ham, dedartment of the Somme, amounting to 96 kilograms of undiluted juice out of 100 kilograms of apples. Thus an almost complete extraction is reached by this process, whilst with the hydraulic press it is barely possible to get 80 kilograms out of 100 kilograms of fruit. Moreover, the hydraulic press is but rarely used; the process is too delicate and takes too much room, to which even the good presses with screws are preferred, which only give about 68 per cent. of juice and therefore leave a very valuable pulp for distilling as well as for manufacturing a weaker drink by adding water, frequently mixed with the pure apple juice of the first pressing.

Besides this maximum product by diffusion, as practiced by Mr. Fossier, a superior cider is the result, and it is to be remarked that the juice normally contained in the cells of sound fruit is free from the excessive gelatinous principles found in the press-rendered juice, which are hurtful to the preservation and to the taste of the cider.

These substances, which are the result of the transformation of the "pectine" (pectose gelatinous principles) of the fruit, can not really be avoided in the manufacture of cider by the pressing process, because then the primordial principle of the latter method is to open, in the easiest way possible, the utmost number of cells. This is precisely what has to be done in order to determine the pectic fermentation, and it is to be observed that the cider obtained by the various processes of maceration hitherto used partake, and sometimes to a greater degree, of the same disadvantages as pressed cider.

For the manufacture of cider the apparatus of diffusion must be different from that for beet-root; it is essential that all parts which come in contact with the juice must be made of wood or such other material as will not have a damaging effect upon the cider. The apparatus of Mr. Fossier at Ham consists of diffusers made entirely of wood; they are put up in a line, without covering, so that they can be inspected and

controlled in every way; they are mounted on stands, so that it is easy to control the emptying-doors, the joints of which always leave something to be desired. The filling is done by dropping the chopped apples into the diffuser, and to empty it the diffuser is simply turned on its stand.

The apples are taken to the story above the works, where they are chopped up into small pieces. A wagon running on rails above the battery of diffusers receives the chopped fruit and transports it to a given diffuser. The juice proceeding from the apparatus runs into fermenting vats without any other handling. Another great advantage of this arrangement, noticed by all visitors, is the cleanliness, which can not be approached in the pressing process.

We call the attention of the cider manufacturers, whatever process they may use, to a practice which is regularly and advantageously used in the cider-mill of Mr. Fossier, and this is, that the apples have to be washed before beginning operations, and also to the careful separation of all the good from the bad ones in order to obtain cider which will keep.

Nearly all disorders cider is subject to are owing to secondary fermentation, which often appears in the heaped-up apples, developing simultaneously with alcoholic fermentation, and may reach such proportions that the latter is sometimes interfered with.

We say also that fermentation rejects all impurities left in or communicated to the cider, which sometimes appears when pond water has been used, and which frequently is anything but wholesome. Only drinking water should be used; it is an essential requisite of good or superior cider.

Production of cider apples.

[Figures received by courtesy of the minister of agriculture.—Tons, 2,000 pounds.]

Departments.	1885.	1886.	1887.
	Tons.	*Tons.*	*Tons.*
Seine-Inférieure	251,020	92,730	170,280
Calvados	137,500	75,350	55,000
Manche	150,810	114,510	415,800
Ille-et-Vilaine	44,500	152,680	242,800
Côtes-du-Nord	330,000	110,000	154,000
Finistère	41,080	41,910	41,965
Eure	213,180	79,590	115,480
Morbihan	306,240	174,350	218,800
Orne	181,500	44,000	16,500
Loire-Inférieure	44,000	44,000	33,000
Mayenne	160,880	52,140	39,160
Total France	2,411,970	12,052,270	(*)

* Not yet published.

Production of apple cider.

[Figures for 1887 received by courtesy of the minister of agriculture.]

Departments.	1885.	1886.	1887.
	Gallons.	*Gallons.*	*Gallons.*
Seine-Inférieure	29,920,000	14,733,400	27,434,000
Calvados	47,982,000	17,864,000	40,502,000
Manche	56,210,000	11,760,000	34,452,000
Ille-et-Vilaine	71,830,000	31,746,000	53,900,000
Côtes-du-Nord	30,888,000	17,089,000	20,900,000
Finistère	5,984,000	1,980,000	52,800,000
Eure	28,072,000	14,702,600	20,906,000
Morbihan	22,902,000	10,780,000	22,660,000
Orne	43,758,000	12,166,000	20,042,000
Loire-Inférieure	6,952,000	5,720,000	50,600,000
Mayenne	19,316,000	8,558,000	61,116,000
Total France	439,032,000	182,022,000	(*)

* Not yet published.

Average for ten years, 1876-1885, 279,294,000 gallons.

CIDER MAKING IN ENGLAND.

A paper read by D. R. Chapman at the Atheneum, Liverpool, and published in the Journal of the Royal Agricultural Society of England.

[Transmitted by Consul Lathrop, of Bristol.]

In these days of keen competition and agricultural depression it becomes a duty to look more closely into comparatively small matters, and either endeavor to find new fields of energy or point out old sources of income which have been neglected, but which may be revived with some prospect of success. Among the latter is one which, until a century since, was a source of great profit to many, but now has fallen into great neglect, viz, the production of those pleasant and wholesome drinks, when pure, cider and perry.

Both liquors have a pleasant subacid taste, and are very clean on the palate, perry, as a general rule, being much the sweeter of the two. Among our forefathers they were supposed to conduce to longevity and possess many medicinal qualities, and this opinion still remains in the cider-growing districts. Many eulogiums have been written in their praise, notably "Phillip's Cyder," and two quaint old tracts, one of which was written by the Vicar of Dilwyn in 1677, and is quoted in Dingley's "History from Marble," who says: "Our flourishing orchards * * * yield us plenty of rich and winy liquors, w^h^ long experience hath taught do conduce very much to the constant health and long lives of our inhabitants, the Cottagers as well as y^e^ wealthier using for the most part little other liquors in their families, than restorative syder;" and in a poem of some length again says—

With all the Gallick wines are not so boone
As Hearty Sider, y^e^ strong son of wood
In fullest tydes refines and purges blood.

At the end he gives a list of six or eight persons who died in his own parish during his vicarage, whose drink was nothing but cider, and whose ages ranged from ninety to one hundred and fourteen. The other tract relates a morrice dance which occurred at Morehampton, where ten persons danced whose united ages reached the total of more than a thousand years. Perry made from the Barland pear is supposed to be good for diseases of the bladder and kidneys, and is taken and recommended for them in the districts where that fruit is cultivated.

The cider-producing districts in England at the present time may be divided into two: One, which may be called the west midland district, embracing Herefordshire, Worcestershire, and parts of Gloucestershire and Monmouthshire; the other, the western district, containing the three counties of Somerset, Devon, and Cornwall. Cider was formerly made in some quantities in Kent and Sussex, but, for reasons which will be stated when treating of those counties, the manufacture has ceased, at any rate for the market. At what time the apple was introduced into the west midland district is not very clear, but that there were good and bad kinds in the fourteenth century we can gather from the old poem "Piers Plowman's Visions," where the following lines occur:

I preide Piers tho to pulle a down
An appul and he wolde,
And suffer me to assaien
What savour it hadde—

while in the sixteenth century we have the testimony of old Gerarde—who says in his "Herbal," A. D. 1597: "But I haue seene in the pastures and hedgerows about the grounds of a worshipful Gentleman dwelling two miles frow Hereford, called Master *Roger Bodnome*, so many trees of all sorts, th t the seruants drinke for the most part no other drinke but that which is made of apples; the quantity is such, that by the report of the worthy Gentleman himself the Parson hath for tithes many hogsheads of Syder"—that both the apple and the cider made from it were common and well known. Some sixty or seventy years after, the cultivation of this tree received a great impetus from the care and attention bestowed upon it by Lord Scudamore of Holm Lacy, who, while serving his country as ambassador to the court of France, obtained grafts and cuttings of the best fruits grown in that country and distributed them through the orchards of his native county. But, although the impetus received in the cultivation of the tree was great, the manufacture of cider did not reach its zenith until quite a century later.

Worcestershire has always been more celebrated for its perry. In Gloucestershire and Monmouthshire, until a very late period, the orchards were chiefly confined to the Herefordshire side of both counties, but the cultivation of both the apple and pear has spread considerably of late years, although, perhaps, more in the case of Gloucestershire with reference to the cultivation of what are known as "soft fruits," than those more especially devoted to the manufacture of cider and perry. This county, like Worcester, is better known as a perry-producing district. With few exceptions the orchards throughout the whole of this district had been allowed to fall into a state of great neglect; but chiefly owing to the exertions of the Woolhope Naturalists' Field Club, who meet at Hereford, and under whose auspices that magnificent work "The Herefordshire Pomona" was published some two or three years since, a great deal of attention has been paid to them, which, it is hoped, in a few years' time will amply repay the owners.

The following table will show at a glance the number of acres under orchard cultivation since about 1810; but it is not to be supposed that these plantations are all devoted to the cultivation of cider and perry fruits, as great quantities of soft fruits are now grown:

Date.	Hereford.	Worcester.	Gloucester.	Monmouth.
1810			6,000	
1871	20,811	11,057	10,841	2,672
1881	27,000	16,000	14,170	3,800
1886	27,112	18,537	15,500	4,037

In the western district the writer has been unable to trace the first mention of cider or perry; but from time immemorial both Devon and Somerset have been famed for their orchards, and in recent years an extensive trade has been carried on in both these beverages. Comparatively little cider is made in Cornwall, but the Devon and Somerset sides of Dorset produce excellent cider, and a good deal of attention has been paid of late years to the orchards of that section of the west country. Although some perry is made in this district, no corrections or additions have been made to the list of pears appended to this paper, from which it would appear that either the kinds mentioned are the ones grown in the west midland district, or the writer has not been fortunate enough to come upon any one who can give him any information upon this point. Singularly enough, although large collections of cider fruit were sent to the different Pomona shows held at Hereford under the auspices of the Woolhope Club, no perry fruit was ever sent.

The following table will show the acreage under orchards in this district:

Date.	Devon.	Somerset.	Cornwall.
1871	30,013	16,267	7,408
1881	26,000	22,800	4,800
1886	26,414	23,640	5,120

As in Kent and Sussex comparatively little cider is now made, it has not been thought necessary to give the acreage of orchards under cultivation. In the former county the Kentish Goff used to be planted and grown for the purpose, but latterly it has been found more profitable to make it into jam. What little cider or perry is now made in either of these two counties is manufactured for home consumption from the fallings of the trees, cultivated as soft fruits.

In Norfolk some cider of a good quality is still made, but from what fruits the writer has been unable to determine.

The causes which led to the deterioration of the orchards, and through this to the bad quality of the liquors produced therefrom, were many, and varied to some extent with the position of the different districts. The first and primary cause was doubtless our continual wars from about 1740 to 1820. During the whole of that period we may be said to have been constantly embroiled either with one of our continental neighbors or with America. At that time our population was comparatively very small, and the constant warfare at sea made it a primary necessity that greater care should be taken by the agricultural community in the production of food, both cereal and cattle, for their countrymen. From the very fact of the demand being great and the supply limited, high prices arose. Farmers grew rich,

they took larger farms in order to cultivate that which paid them best, and this led to the neglect of the orchard: so that, instead of cider or perry being made of a good quality for the market, the fruits were in most cases mixed indiscriminately, and only a small portion really good made for the use of the homestead.

Unfortunately this was not the only result of the neglect. The trees themselves were left unpruned and uncared for, unless faggots were wanted for burning, until they died; when, instead of replacing the old sorts by young trees of the same kind or better, a good-looking seedling or wilding was put in. Worse still, this kind of proceeding was contagious, and, if one may say so, in some degree hereditary. The son thought what was good enough for his father was good enough for him; or perhaps a new local variety bearing a great reputation had meanwhile sprung up, which was duly planted, and so made confusion worse confounded. This has gone on down to the present day, with such deplorable results that it has been stated upon good authority that fully one-half of the trees in our orchards should either be cut down and regrafted with well-known kinds, or uprooted altogether.

Again, the liquors were taxed, and the constant presence of the inland revenue officer, during the different stages of manufacture, was a source of annoyance and disgust to the farmer, who, rather than be bothered with his presence, gave up making altogether. True, the tax was ultimately repealed, but too late; the mischief it had wrought had been completed. Although a considerable quantity of cider was still made, it was of an inferior quality, and all that remained over from the quantity required for home consumption passed into the hands of the middleman, when the culminating point of the mischief already wrought was completed. In his hands all kinds were indiscriminately mixed together, and, in too many cases, such filthy and nauseous ingredients were used in fermenting and fining it that when the liquor was sent out it was at times very difficult to say what it was. This compound was bottled and placed upon the markets at London and Bristol—then the principal places to which this kind of produce was sent—and from them distributed over the country. Some of it is said to have traveled as far as Hamburg, and then made its re-appearance here as fine old port and sherry. Even now, at the present day, a good deal finds its way into the hands of wine merchants; but what they do with it is best known to themselves, as it never re-appears under the name by which it was sold to them.

In England the cultivation of pears for the manufacture of perry is carried on in the counties of Worcester and Gloucester and that portion of Herefordshire adjoining them, and in the counties of Devon and Somerset. In France and the Channel Islands the cultivation of the pear for the purpose of perry making may be said to be entirely neglected. It is somewhat difficult to account for this, unless it be from the greater autumn temperature, which would render the higher fermentation of the liquor much more difficult to carry through than in England. For what little they make in those countries the worst of the dessert fruit is used, which is not always a success, as it is as true of pears as of apples, "the smaller the fruit, the better the liquor;" and again, ripe and unripe fruits are ground up together. In Germany the pear, on the contrary, is extensively cultivated, not so much for its value as a fruit, but for distilling into brandy, which is said to be of excellent quality. In America they are only just commencing to cultivate the pear for perry making; what they have hitherto manufactured has been from dessert pears which could not be readily disposed of.

Before proceeding to the consideration of the subject, it may perhaps be as well to consider a little the qualities which good cider and perry fruit should possess. The subject will be fully considered when the manufacture of the liquor is treated of, but it will do no harm to lay before the grower the various qualities he should keep in view. These are three:

(1) It should be a free bearer.

(2) The fruit should possess all those qualities which are necessary for the production of a good cider or perry.

(3) The tree should be hardy, of vigorous and rather upright growth, as those with a drooping habit would be very liable to have the lower branches broken off by the cattle which would graze the orchard after it was firmly established.

Unfortunately, as a general rule, the best fruits are apt to be rather shy bearers, or produce a crop every other year, while many of the second-class varieties are very free bearers and growers. This being the case, it would always be judicious to plant some of the latter, as they would furnish a certain quantity of liquor, which could be strengthened and improved by the admixture of that derived from the former—the best fruits, in short, supplying what the second-rate ones lack. When the best fruits, however, do bear well, they make ample amends for their capriciousness by the enhanced value of their cider or perry.

In order to lay before the reader at a glance the best fruits for his purpose, a

table has been prepared showing the name of the fruit; growth and habit of the trees; time of blossoming and ripening their fruit; the density of the juice after twenty-four hours' exposure to the air; the percentage of sugar contained in each 100 parts; the percentage of tannin, mucilage, and salts in the same quantity; the principal locality in which the particular fruit is commonly grown; and other remarks which may add to the value of the description.

APPLES.

Name of variety.	County where grown.	Growth and habit.	Time of blossoming and ripening fruit.	Density of juice.	Sugar	Tannin, mucilage, salts, etc.	Remarks.
Alford	Devon	Large, spreading; free bearer.	.....	.....	.....	.....	
Ancell.....	Gloucester..	Large, erect; free bearer.	.....	.....	.....	.....	
Belle Orchard Seedling. *Ledbury Belle.*	Hereford ...	Medium, upright, vigorous; free bearer.	....	.....	.....	.....	
Black Norman ...	Hereford ...	Hardy; free bearer.	End of May	1.037	11.9	1.125	Makes a good cider.
Black Hereford..	.....	Moderate grower..	End of October.	.....	.....	.....	
*Broad-leaved Norman. —— *Hereford*	Hereford ...	Hardy; free grower and bearer.	End of May End of October.	.....	.....	.....	
*Cherry Norman..	Hereford ...	Hardy; free grower.	.....	1.045	12.8	2.07	
—— *Hereford*....	.....	Moderate bearer.	.....	.....	.....	.....	
*—— Pearmain ...	.....	Hardy; medium grower, good bearer.	.....	1.05	12.7	2.0	One of the most useful apples a farmer can grow.
Chibbles Wilding.	Somerset ...	.....	.....	.....	... ..	.....	
Cider Brandy Apple.	Worcester ..	.....	.....	.....	.....	.....	
—— Lady's Fingers.	Hereford ...	Hardy; free bearer.	Second week in May. End of September.	1.045	13.25	1.4	
Coccagee.....	Hereford ... Somerset. Devon.	Hardy; moderate grower, free bearer.	Middle of May.	1.056	9.08	7.8	Going out of use in Somersetshire.
*Cowarne, red.....	Hereford ...	Medium grower and bearer.	.....	1.047	11.9	1.42	
*Cummy, Norman. *Cummy.*	Hereford ...	Hardy; free grower and bearer.	.....	1.04	14	.06	A very small fruit.
Deane's Bittersweet.	Devon ..... Somerset.	Large, handsome; good bearer.	.....	.....	.....	.....	
Dymock Red.....	Gloucester.. Hereford ...	Hardy; free grower and bearer.	.....	1.037	12.1	3.3	
*Eggleton Styre...	Hereford ...	Hardy; good grower, free bearer.	Middle of May. Middle of October.	1.05	10.6	6.57	
*Foxwhelp (Old)..	Hereford ...	Rather large; slow grower, shy bearer.	Middle of May. End of October.	1.07	14.4	8.5	What few trees there were in the western district are now going out of cultivation.
Foxwhelp (New or Rejuvenated)	Hereford ...	Fair grower, medium bearer.	.....	1.044	8.0	4.3	A good sauce-apple, sells well as pot fruit.
Green Wilding ...	Hereford ...	Hardy, upright; free grower and good bearer.	.....	1.045	10.53	3.17	
Golden Moyle	Hereford ...	Large; free grower and bearer.	.....	.....	.....	.....	Sells well for jam making.
*Hangdown..... *Horner.*	Somerset ...	Small, spreading; very free bearer.	.....	.....	.....	.....	
*Handsome Norman. —— *Hereford.* *Belle Norman.* *La Belle Normandie.*	Hereford ...	Moderate grower; rather small, good bearer.	Middle of May. End of October.	1.052	11.9	4.04	
*Hollow Core	Somerset ...	Free grower and bearer.	.....	.....	.....	.....	Sells well as pot fruit.

APPLES—Continued.

Name of variety.	County where grown.	Growth and habit.	Time of blossoming and ripening fruit.	Density of juice.	Sugar	Tannin, mucilage, salts, etc.	Remarks.
Jersey Chisel..... *Chisel Jersey. Bitter Jersey.*	Somerset...	Free grower, good bearer.	.....	.....	.....	.....	
Joeby Crabb.....	Hereford...	Free grower, fair cropper.	.....	1.052	10.3	4.4	Makes a very strong, rough cider.
Kingston Black.. *Black Kingston. Taynton Black. Taunton Black. Dormington Red.*	Somerset... Hereford.	Medium size, spreading; first-rate cropper.	.....	1.058	10.08	6.8	This first-rate fruit has, strange to say, gone very much out of cultivation in its native district, the western.
Morgan's Sweet..	Somerset...	Hardy, vigorous grower; good bearer.	Early	.....	.....	.....	
Ponsford.....	Devon..... Somerset.	Hardy; free grower and bearer.	.....	.....	.....	.....	Sells well as pot fruit.
*Red Norman..... —— *Hereford.*	Hereford...	Small; fair bearer.	Middle of May. End of October.	1.049	11.9	4.0	
*Royal Wilding... *The Cabury.*	Hereford...	Hardy, spreading; shy bearer.	End of May	1.067	10.7	4.7	Cider turns dark in the cup.
*Skyrme's Kernel.	Hereford...	Fairly hardy; free grower, shy bearer.	.....	1.065	10.6	3.6	
*Slack-my-Girdle	Devon..... Somerset.	Hardy; free grower and bearer.	.....	.....	.....	.....	Sells well as pot fruit.
Strawberry Norman. *Hereford.*	Hereford...	Hardy; free grower, spreading, good bearer.	Middle of May. End of October.	1.045	13.74	1.07	Cider turns dark in the cup.
Red Cluster.....	Devon..... Somerset.	Large, free grower	.....	.....	.....	.....	The trees are apt to split.
Red Cap..... *Cap of Liberty.*	Devon..... Somerset.	Fair grower, good bearer.	.....	.....	.....	.....	Good fruit for mixing.
Red Splash..... *Rollings Kernel.*	Hereford... Worcester.	Hardy; good grower, free bearer.	....	1.042	9.6	4.8	Poor cider, but the fruit commands a ready sale for jam making.
*Stone Apple.....	Devon..... Somerset...	Free grower, good bearer.	.....	.....	.....	.....	Fruit large and handsome.
*Styre Wilding.... *Canon Bittersweet.*	Hereford...	Hardy small; bears profusely every second year.	Middle of May. Beginning of November.	1.044	14.12	0.68	
Taunton Fair Maid.	Somerset...	Free grower, good bearer.	.....	.....	.....	.....	Sells well as pot fruit.
*White Bache..... *White Norman. White Hereford.*	Hereford...	Hardy, rather small, vigorous; very heavy cropper.	Beginning of May. End of October.	1,041	10.78	3.63	
*White Jersey.....	Somerset...	Free grower, good bearer.	Late	.....	.....	.....	
Yellow Styre....	Hereford... Worcester..	Hardy; free grower, good bearer.	.....	.....	.....	.....	

PEARS.

*Barland..... *Bosbury Pear. Bareland Pear. Bearland Pear.*	Hereford... Gloucester. Worcester.	Very large, vigorous; free bearer.	.....	1.043	10.67	2.77	
*Black Huffcap...	Hereford...	Hardy; free bearer.	Beginning of May.	1.050	11.22	3.58	
*Butt Pear.....	Gloucester.. Hereford. Worcester.	Hardy; free grower, good bearer.	.....	1.043	10.7	3.8	

PEARS—Continued.

Name of variety.	County where grown.	Growth and habit.	Time of blossoming and ripening fruit.	Density of juice.	Sugar	Tannin, mucilage, salts, etc.	Remarks.
*Holmer Pear.....	Hereford ...	Hardy, large, vigorous; good bearer.	Beginning of May.	1.055	11.9	3.4	
*Longland ..... *Longden Pear.*	Hereford ...	Very hardy, good grower, and heavy cropper.	.....	1.040	8.4	4.19	
Moorcroft..... *Malvern Pear.* *Malvern Hill Pear*	Hereford ... Worcester.	Large spreading, hardy; good bearer.	Beginning of May.	1.049	11.9	2.39	
Newbridge Pear..	Worcester ..	Large, hardy; good bearer.	.....	1.049	10.08	2.67	
New Meadow	Worcester .. Hereford.	Upright, hardy; free bearer.	.....	1.048	12.0	3.3	
*Oldfield	Hereford ...	Large, hardy; free bearer.	Middle of May.	1.061	13.06	3.7	
Pine Pear	.....	Hardy; free grower and bearer.	.....	1.040	9.3	4.1	
Red Pear ..... *Red Horse Pear.*	....	Hardy; heavy cropper.	Beginning of May. Beginning of Oct'r.	1.089	8.74	3.2	
*Rock Pear	Worcester ..	Hardy, upright growth; bears well every second year.	.....	1.064	17.6	4.15	
*Taynton Squash .	Gloucester ..	Hardy. large; free bearer.	End of April. Middle of September.	1.057	13.47	3.08	
Thorn Pear	Worcester .. Hereford.	Small, hardy; very heavy cropper.	....	1.047	11.5	1.4	
*Yellow Huffcap..	Hereford ...	Hardy; fair cropper.	Beginning of May.	1.049	11.24	2.3	

For assistance in compiling this table the writer has to tender his warmest thanks to a number of gentlemen, most of them strangers to him, who have so kindly supplied him with lists of the best fruits grown in their respective districts, and notably to Messrs. J. H. Arkwright, of Hampton Court, Leominster; John Watkins, Pomona Farm, Withington; Lt. Col. Halifax Wyatt, Croxteth Park, Liverpool; Messrs. R. Welch, Stocklinch, Ilminster; Le Cornu, Jersey; and H. C. Newburn, of Stamford, county Welland, Ontario.

Of the above, those marked with an asterisk are considered the best grown in England for cider and perry making; but an eminent cider and perry manufacturer in the west midland district, Mr. John Watkins of Withington, writes as follows:

"If I were going to plant an orchard for cider and profit only, I should plant broad-leaved Norman to get the crop, Kingston Black and Cherry Pearmain the flavor, and Cherry Norman, White Bache, and Handsome Norman the saccharine matter; the three first I consider the most profitable."

Many other kinds would be as profitable, in the writer's estimation, but probably the crops would not be so sure, notably the Foxwhelp, Skyrme's Kernel, and the Royal Wilding, as the enhanced price obtained for the produce in a good year would about counterbalance the losses from a bad season. If, however, to Mr. Watkins's list be added the Eggleton Styre and Strawberry Norman, the planter in the west midland district can not possibly go wrong.

In the western the favorite fruits and the ones best for cider making are the Coccagee; the Kingston Black, which ought to be kept up, as it is certainly one of the best cider apples grown; the Horner or Hangdown, the Hollow Core, the Jersey Chisel, and the Red Cap. Besides these many of the culinary and dessert apples make good cider. That famous old apple, so well known all over England, "Tom Putt," makes really good cider for home consumption and drinking off from draught, as do the Norfolk and Hereford Beefings, with the Russets and many others. In America it is the rule to make all the cider and perry from the culinary and dessert fruit, using such as the following among apples: Duchess of Oldenburgh, Northern Spy, Baldwin, Golden Russet, etc.; while the pears are all the best kinds which can not be got rid of before they spoil—cider and perry fruit, as we know it, appearing

comparatively unknown. In Jersey it is much the same with the little which is now made there.

The time of year at which the fruit ripens is an important consideration. Many of the early varieties are, as before stated, free bearers, and make excellent cider, but there is great difficulty in carrying the liquor through the various processes of fermentation because of the warm weather of the autumn. This subject will, however, be more fully treated when the manufacture of cider and perry is considered.

Gathering the fruit.—This should, as far as possible, be done under the grower's personal supervision. The proper time will soon be seen by the change of color and strong odor given out by the fruit when ripe, as also by its dropping from the tree. On no pretext whatever should a beating pole, for the purpose of knocking the fruit off the branches, be allowed, as the next year's crop would be greatly damaged by the fruit buds being beaten off at the same time. The fruit should be hand-picked as far as possible, the laborer mounting the tree and shaking off the fruit he can not reach by means of a pole having a crook at the end. The fruit should be protected from damage by falling, where the grass in the orchard is not long enough, by some straw strewn under the trees. During this operation the advantage of having one variety of fruit together, instead of being planted indiscriminately over the orchard, will be very apparent.

As the fruit is picked it should be taken and placed in a heap, each variety by itself, and protected by some means from the rain until it is fit for the mill. If not so protected, the fruit will both lose a quantity of saccharine matter, and its period of maturity be considerably retarded by the alternations of heat and damp to which it is subjected. The heaps should not be too deep—say about a foot or fifteen inches—or the fruit will heat and ferment. If the grower should have barns or other places at his disposal in which he can store his fruits, so much the better; but, failing these, a cheap and easily made shelter sufficient for the purpose would be mats made out of long straw fastened between two poles or laths either with tarred twine or iron wire. In France, as a general rule, granaries and barns are much used, with great advantage to the cider made, it appearing from experiments made upon two samples of liquor—the one made from apples exposed in the orchard, and the other from apples matured in a granary—that the latter contained, six months after being made, one and a half per cent. more alcohol than the former. In America the freezing-houses which are on every fruit farm are used for the same purpose. For a description and details of these buildings the reader is referred to "Downing's American Orchardist." Those fruits which have been blown off the trees or dropped off should not be mixed with those gathered, but be put through the mill by themselves, when they will make a liquor for immediate consumption.

All cider fruits may be divided into three classes, viz, the sweet, the bitter-sweet, and the acid; all of which communicate a distinct taste and property to the cider made from them. The sweet fruit produces a pleasant, agreeable drink, which must be consumed at once or it will soon become bitter and ropy; the bitter-sweet, on the contrary, makes an excellent cider, of good, long-keeping qualities, which may be accounted for by the presence of the bitter principle; while the acid fruits give a liquor fit for no other purpose than making vinegar.

Good cider owes its flavor and long-keeping qualities mainly to the presence of two substances, viz, sugar and tannin; the sugar forming alcohol under the action of fermentation, and the tannin assisting to keep the liquor clear and bright afterwards; but their parts will be more fully treated when that action is discussed.

In order to determine the value of the juice, it is necessary to employ a saccharometer, which is used in the following manner:

Five or six apples are taken of the kind it is desired to test, and the juice crushed out and filtered. The instrument being placed in the juice will float and ultimately settle down at a mark on a scale graduated on the instrument, which scale starts from 1,000, that being taken to be the density of distilled water at 39° Fahrenheit.

Appended is a table showing the amount of sugar contained in a quart of fresh apple juice and the percentage of absolute alcohol it will produce on fermentation. The table commences at density 1.035, which is the very lowest that should be used; indeed, no good cider can be made under 1.040; as there is not sufficient sugar under this density to impart good keeping qualities. For this reason, fairly good cider should contain about 6 per cent. of alcohol, and about one-fifth of its density should be left of unreduced sugar to give it sweetness and body. The so-called champagne cider has its characteristic effervescence entirely due to this. It should be natural, but is helped by the insertion of a little powdered lump-sugar in each bottle before the cider is racked into it. It will thus be seen that the saccharometer will indicate those fruits which it may either be desirable to keep or eradicate from the orchard.

Density of juice.	Sugar in 40 ounces.	Percentage of alcohol.	Density of juice.	Sugar in 40 ounces.	Percentage of alcohol.
1035	2479	4.12	1.060	4.928	8.11
1040	2688	4.85	1.065	5.802	8.76
1045	3559	5.65	1.070	6.027	9.50
1050	3808	6.43	1.075	6.917	10.51
1055	4688	7.26	1.080	7.155	11.88

The fruit, having been fully ripened, should be used at once, as then the normal quantity of sugar present in each kind is fully developed. Should the fruit be allowed to become overripe, and rottenness have set in, a portion of the sugar is lost by the fermentation which then takes place. The proper time is generally determined by the agreeable odor which is given out by the heaps, but it may also be seen in the change of color of the skin, the dark tint of the pips, and small veining or spots which begin to run over the skin. It is most essential that the fruit should be used as soon as it has ripened, and on no account should any rotten fruit be allowed to get into the mill.

In all the operations now about to be described, too much stress can not be laid upon the necessity of cleanliness. Unless everything about the cider-house is perfectly sweet and clean, all the harvest of the year will either be considerably deteriorated or utterly ruined. Especially should great attention be paid to all implements having iron or lead about them. It is for this reason that many cider-makers still adhere to the old stone mill, and with good reason. The acid in the fruit must act upon the iron in some degree. It may be slight, and doubtless is in most cases, but there is always the danger of the presence of rust, which, held in solution by the cider, will turn it black upon exposure to the air. By far the greater danger, however, arises from the contact of the cider with lead, as the liquor easily dissolves that metal and holds it in solution, with very dangerous consequences to the consumer. Too much care, therefore, can never be taken to prevent their contact. It is impossible altogether to prevent it, because the trough stones are held together by iron clamps leaded in; but they can easily be cleaned before use and kept clean afterwards. The pulp should not be allowed to remain in the trough for any length of time, and under no circumstances whatever should a leaky cask be stopped with white or red lead.

For the purpose of grinding the fruit and reducing it to a pulp—which is known indifferently as the "math," "cheese," or "cake"—many machines have been invented, the principal of which are here described. The old machine was a circular trough of wood, having a heavy wooden roller studded with large nails revolving in it, which crushed the fruit; but the necessity for a greater weight to crush it more led to the employment of stone troughs and rollers. It consists of the following parts: the trough, the bruising stone or roller, cog-wheel, and upright axle.

The trough, which of course is circular, is of stone and hollowed out to the depth of about nine or ten inches, the edge next the axle being cut with a perpendicular face, while the outside one is cut slanting from the top to the bottom, leaving the top edge, from 2 to 3 inches wide, the thinnest. It is generally made about 30 feet in circumference, and in four parts, of millstone grit, clamped together when laid down with iron clamps. On the top of the outside edge is placed some wood-work technically called "curbing," of the same thickness as the edge of the trough at bottom, but finishing off with nearly a sharp edge. Its object is twofold: first, to prevent the fruit and pulp from being carried over, and, secondly, to correspond with the planking which covers the nut in the center.

The bruising stone or roller, made of the same material as the trough, is generally made from 4 to 5 feet in diameter and nearly the same width as the trough, flat on the side next the center, but a little convex on the other. In the center of the runner is placed a strong wooden axle, connected by means of a strong iron rod with an upright axle in the center of the stone trough. This rod projects far enough from the outside of the runner to connect by means of another iron rod with a wooden bar, which is also linked with the upright axle, and to which is fastened the horse. The height is easily regulated by a bed of concrete or stone-work under the trough.

The cog-wheel, about 2 feet in diameter, is fitted to the horizontal axle and runs on the wood-work which covers the whole space between the interior edge of the trough and the perpendicular axle, and is called the nut. The teeth of this wheel link into upright teeth fixed in the nut, and thereby force the roller to take a rotatory motion. The diameter of the wheel will of course be regulated by the center of the roller above the nut.

The perpendicular axle has an iron pin at each end for pivots which run in a sunk iron center; the wood of the axle, being bound with an iron ring, forms the shoulder.

In addition to the mill there will be required a stirrer, a reever, and a shovel.

"The stirrer is a strong stick by which the boy who attends to the horse and walks before the stone removes the pulp and fruit from the sides to the bottom during grinding. The reever is a piece of board, made of the same shape as the section of the trough, fastened to a wooden handle, and is used to draw the pulp together in the trough previous to its removal by the shovel, which should also be of wood."

The reason for using wooden implements has been stated above. This mill is now greatly used in all the cider-making districts in England and the Channel Islands, and is by many eminent makers and connoisseurs considered the best, as no metal comes in contact with the juice expressed, and the fruit and kernels are thoroughly pulped. Its chief disadvantages are that the fruit is apt to roll before the stone roller and so not get properly crushed, unless well looked after, and that there is considerable trouble entailed in removing the cheese from the trough.

Latterly there have come into use many smaller machines, worked either by steam or horse power or manual labor. They are all modifications of one form, and the best of them appears to be the following:

"On the top of a stout iron framework is fitted a large hopper or feeder. Under this, driven by a drum from the source of whatever power may be used, are two wooden rollers closely studded with iron teeth or knives, which cut, or rather scrape, the fruit into a fine pulp. This pulp passes underneath to two fluted stone rollers, generally granite, which are made to revolve at different rates of speed, and which crush the kernels that may have escaped the cutting action of the cylinders above. From these the pulp passes into a tub placed under the machine to receive it."

By whatever means used, this machine gives a great saving of time and power over the old mill; but in the eyes of many connoisseurs it is looked upon with disfavor, on account of the iron knives used in the two upper cylinders; and upon the whole it is doubtful whether the economy of time and labor saved by its use is not a false one, by reason of the temptation to rush everything through the mill at one time which is to be ground.

In America this machine, or one of a similar character, has now come into almost universal use.

In France, owing to the small size of the orchards, the mill is generally worked by manual labor. Like the old English mill, the former favorite among the Norman cider-makers was of stone, and consisted of two grooved cylinders of stone having teeth in them, which crossed each other, and were made to revolve by means of two arms crossing each other, and having attached to each end a heavy leaden weight. At the top was a hopper, in which the fruit was placed to be ground. The whole piece of apparatus was very similar in appearance to a modern turnip-cutter, and, like that implement, was mounted on a platform with wheels, by which it could be moved from place to place.

Latterly this mill has had to give way to two others, the invention of two engineers at Caen—the Écraseur Salmon and the Concasseur Berjot.

The Écraseur Salmon consists of two spur-wheels or cylinders, in which are placed iron or steel spikes of a conical form, and which revolve with an unequal velocity. The fruit, having been broken up by these two wheels, is passed between two channeled granite rollers placed below, which can have the distance between them regulated by means of screws. These two cylinders are set in motion by means of a spur-wheel, placed on the principal axis, running into two fly-wheels, to which whatever power used is applied, and which, working in a train of wheels, causes all four to rotate. When used with one horse-power it is said to be equal to pulping 100 bushels per hour.

The Concasseur Berjot is a very simple and ingenious piece of apparatus: Two granite cylinders mounted on horizontal axes fixed into a strong wooden framework, a fly-wheel, handle, a spur-wheel, a pinion, and a hopper compose the instrument, which it is stated is equal to pulping 150 bushels of fruit per hour when worked by one horse. It also can be used by manual labor, and serves for all farm purposes where pulping is required—such as grinding roots, oil-cake, etc. The cylinders can be set any width apart by means of set-screws, and with a strap it is equally available as a thrashing-machine.

In Jersey the cider and perry orchards are going out of cultivation; but where these liquors are still made, the old stone mill as used in England was, and still remains, the favorite instrument for grinding.

In grinding the first lot of fruit, it is necessary, especially in a dry season, to

sprinkle a little water over the fruit, and from the first lot ground to express the juice by means of the press and use that for the successive grindings.

Upon the necessity of bruising the apple-kernels or the advisability of so doing great diversity of opinion exists. By all the older cider-makers, and by many of the modern, it was held to be a *sine quâ non* that they should be bruised if it were wished to make a long-keeping cider of good quality. Science, however, says this is not the case. The whole subject was thoroughly investigated some twenty-five years since by M. F. Berjot, jr., of Caen, the inventor of the Concasseur, who read his report at the fiftieth anniversary of the foundation of the Caen Society of Agriculture and was awarded a prize for the same. In it he says:

"For all cider of the best quality it is not necessary that the pips should be bruised, as by their odor they mask the agreeable flavor so much admired by connoisseurs in those vintages; on the contrary, for second-quality cider it is an advantage to bruise them, as by so doing those vintages obtain a bouquet and flavor they otherwise would not have. For the manufacture of cider destined to be converted into brandy it is indispensable. The essence of the pip imparts to the young brandy a flavor of noyau, which after a time becomes decomposed into benzoic acid, and gives to old cider brandy that balsamic perfume so much admired and sought after by *bons vivants*."

After the pulp is made it should be allowed to stand for ten or twelve hours, or, better still, twenty-four, if possible, before it is put into the press. For this purpose large wooden tubs or vats are used, which are filled to within a foot or eighteen inches of the top, and which at the end of the time mentioned will be found covered with a white froth. The reason for this operation is as follows: The juice of the fruit and the pulp contain, in common with all other vegetable juices, a great quantity of sweet mucilage, which can not be taken up by the act of fermentation itself, but by this initial process an albuminous substance susceptible of becoming so is formed, after having been subject to the action of the air. The operation also assists the coloring of the cider, as a reddish-brown coloring matter is developed in the cheese, which color is imparted to the liquor and adds considerably to its aroma. Provided the temperature of the house in which the pulp is put is not high—say about 40° to 45° Fahrenheit—it may be allowed to stand several days with great advantage, the scum which forms on the surface keeping off the action of the air and thus preventing acetous fermentation.

The pulp having been allowed to stand for some twelve to twenty-four hours, as above stated, will now be ready for the press. The press used is a modification of the ordinary cheese-press in use on all dairy farms, and consists simply of a framework, with a stout board at the bottom, on which the pulp is placed, and a stout screw at the top to apply the pressure. All being in readiness, a stout cider-cloth, made of horse-hair, about four feet square, is placed on the board, and on this is placed sufficient pulp to allow the corners of the cloth to be folded over and nearly meet in the center on the top; over this is placed another lot of pulp, and so on until the press is full. In Devon and Somerset they put clean straw also between each layer, technically called the cheese. Pressure is then applied very gradually until the cheese is dry. As the liquor runs it is caught in a pail and carried to a large wooden cask, in the west midland district, generally holding from about 100 to 120 gallons, but in the western seldom more than 60. This cask is nearly filled, a little ullage space being left for fermenting purposes. If the cheese is not further required it is thrown on the muck-heap; but if it is wished to make small cider—"ciderkin," "purre," or "washings," as it is called—the must is laid by and reground with a small quantity of water, and makes drink for immediate consumption.

Before entering upon the details and precautions to be observed during the process of fermentation, it would perhaps be as well to describe shortly what that process is.

All saccharine juices are capable of four different kinds of fermentation, viz, vinous, acetic, viscous, and putrid, the first and third of which are certainly due to the action of microscopic fungi; the second may be so, but as the arguments pro and con are numerous and strong, and this paper not long enough to contain a dissertation upon the subject, it will be treated as a chemical one, while the fourth is due to the presence of "bacteria," which are small microscopic organisms having motion, but whether animal or vegetable is unknown.

Vinous fermentation is that particular change which all native saccharine juices are liable to undergo when exposed to the air and left to its normal temperature. If a small quantity of these juices be carefully filtered through filtering paper and rendered bright, they may be left to themselves for an indefinite period and no change takes place, but upon the addition of ever so small a quantity of the unfiltered juices a change sooner or later takes place. This change manifests itself in the first place by a thickness and turbidity in the liquid, which is owing to two causes: first, the evolution of carbonic acid, and, secondly, the formation within

the liquid of a finely divided solid, which through the evolution of the gas is partly kept in suspension in the liquid and partly thrown up to the surface, which is known as yeast.

During this process an effervescence of a more or less disturbing character takes place, sometimes taking the form of a violent ebullition, the temperature of the liquid itself rising above that of the surrounding air, and the yeast becoming more abundant. Sooner or later a climax is reached, effervescence ceases, when the yeast settles at the bottom as a slimy deposit. Above this the liquid is clear and bright, and upon the top of the liquid there floats a mass of cellular tissue, supported mainly by the bubbles of carbonic-acid gas given off. On tasting the liquor now the flavor will be found to have changed, and instead of the sweet taste it formerly had there will be a decided vinous one.

This change is due to the action of the yeast-plant, a microscopic fungus, named *Saccharomyces pastorianus*, after the distinguished French savant, M. Pasteur. Like most organized beings it lives by absorbing oxygen from the air, but being unable to obtain more than a very small quantity of that gas in the liquid in which it is immersed, it obtains the oxygen from the sugar, and in decomposing the sugar sets free more oxygen than it requires. This free oxygen unites with the carbon and hydrogen present, and forms the various products of the fermentation. The yeast-plant is not a product of the fermentation, but the cause of it, the plant, as above stated, being always present upon the skin of the various fruits used.

Having thus considered the only fermentation which the cider-maker wishes to see, we will describe the process which he will have to carry through to a successful issue. In this, great care will have to be taken with the temperature of the barn or cellar in which the fermentation is carried on. If possible, the temperature should be sustained at from 55° to 60° Fahr., not letting it fall below 50° or rise above 75°, as in both cases the operation will cease. Should there be any tendency to fall, the temperature can easily be raised by means of a small portable stove, with a fire in it, which is the method adopted in France. Supposing every condition favorable, in about a week fermentation will have ceased and the liquor will be fine, having on the top a thick floating mass of skin and pulp, and the bottom a thick ropy mass, being in the condition which is known as "lying between the two lees." This is the favorable moment for "racking" it, and the operation is best performed with a siphon, the thick portion at the bottom being filtered clear through proper filtering bags and added to that already drawn off. The cask into which it is racked must be perfectly clean and free from any smell whatever, and afterwards the temperature be kept low. A considerable ullage should be left in the cask in case secondary fermentation should set in, when the whole operation must be repeated.

The entire operation is a crucial one, and will test the cider-maker's watchful care and management to the utmost, for the most skillful operators can not always command success at once, many causes operating against it. The season may have been bad and the fruit not ripened properly; the fruit may have fermented in the heaps, become frost-bitten, or rotten; it may be poor and watery; the temperature may be too low at the time of making and retard fermentation, or even stop it altogether, or it may be too high and carry it through too quickly, although with proper buildings this is to a very great extent under the maker's control; lastly, there may have been a want of cleanliness in the vessels or implements used. This latter may be considered fatal, and is certainly under control. Let the ciderist take heed and pay as much or even more attention to his cider implements during the process of making as the dairy farmer does to his dairy utensils.

From the above remarks it will be gathered that vinous fermentation may be of three different degrees—viz, too active fermentation, which takes place when the juice is rich in saccharine matter and the temperature high; dilatory fermentation, which may be caused by poor juice or a sudden spell of cold weather; and persistent fermentation, or, as it is technically called, "fretting," which, however, arises mainly from the inferior quality of the fruit and therefore of the juices yielded by them. The first need not cause much trouble, its worst evil being the waste of the liquid. The only remedy is to cool the temperature as much as possible, by allowing a current of air through the house or cellar, sprinkling the floor with water, throwing wet cloths over the barrels, or any other method which may suggest itself. The second is much more difficult. If it arises from too low a temperature, that can, as already stated, be very easily overcome by closing the house or cellar and lighting a stove or two in it. Should this not be found sufficient, the French method may be adopted of taking two or three gallons of juice out of the cask, heating it to about 70°, and then returning it, stirring it up quickly with a bundle of osier twigs.

"Fretting," or persistent fermentation, is much more difficult to overcome, as the root of the evil is in the juice itself. Should it continue for any length of time,

the saccharine matter becomes exhausted and the liquor becomes acid. As soon as this occurs, the fermentation must be stopped at any cost, and in order to do this one of the yeast-destroying agents must be used. These are sulphur, salicylic acid, sulphurous-acid water, bisulphate of soda, or lime, and many others. The ones principally used both in England and abroad are the two first, and of these two the second is the easiest to manipulate and has come much into favor. When used in proper proportions it is perfectly harmless and free from all objectionable smell or taste. When used in a concentrated form, from one ounce to one ounce and a half to every hundred gallons of liquor is the proportion, and it is poured into the liquor immediately after racking. Should any iron be present, however, it will turn the liquor black. Sulphuring was formerly universally used, and its method of application is very simple.

A little sulphur is melted, and into this is dripped a strip of clean canvas or linen about a foot long and two or three inches wide. This is taken out and allowed to harden. It is then tied to a stick or piece of wire, lighted, and inserted in the cask into which the liquor is to be racked and allowed to burn until it goes out. The cask is then full of sulphurous fumes, and while in this state the liquor is run in. This absorbs the sulphurous-acid gas, which kills the yeast-plant without retaining any taste or smell.

If fermentation should again set in, the operation must, of course, be repeated. The use of chemicals, however, and the endeavor to make good liquor from bad juice is the rock upon which cider has split and got its bad name. The best cider-makers never use them, and it may be laid down as an axiom that cider or perry is pure and good in the inverse ratio to the amount of chemicals used in its manufacture.

Acetous fermentation.—It is well known that all weak fermented liquors, when exposed to the action of the air for any length of time, become sour and turn to vinegar. As has been above stated, this will be spoken of as a chemical reaction, although M. Pasteur asserts that it can not take place without the presence of a small microscopic fungus, called *Mycodermes aceti*. The chemical action, whether due to the presence of the fungus or not, is as follows: The alcohol in the liquor absorbs oxygen from the air and forms aldehyde and water; but the aldehyde in ordinary acetous fermentation never appears, the aldehyde taking up oxygen from the air at once and forming acetic acid. The fungus is visible to the naked eye, when in large quantities, as a blue mold on the top of the liquid, which at length sinks, and is then well known as the vinegar plant.

Viscous fermentation, or ropiness.—This peculiar change, which sometimes accompanies vinous fermentation, manifests itself by the liquor becoming thick and viscous to such a degree that when poured from one vessel to another the liquor draws into long threads. According to Pasteur, this is due to the presence of a very minute fungus with spherical cells, which has not as yet been named, but which has the property of changing the glucose into a kind of gum, which is always accompanied by mannite and the evolution of carbonic-acid gas. In some seasons this fermentation is very troublesome, and unfortunately the remedies recommended to cure it are as bad as the disease.

Putrid fermentation.—This is not a fermentation at all, but is due to the presence of bacteria and vibriones, whose position in the world of life has not yet been determined. Suffice it to say that their germs are always present in the air, ready to seize any opportunity which may present itself favorable to their growth, and that, although there is no cure for this kind of fermentation, it may be prevented almost entirely by scrupulous cleanliness in all the operations of making.

The method of treating the liquor in France during and after fermentation is much the same as that above given, with two slight modifications. One of these is the addition of a small quantity of catechu, about 8 ounces to 100 gallons of the liquor, when racked off; and the other the fumigation of the casks, which is always done, perferably by burning a little alcohol in them, or, should their condition be deemed at all doubtful, by burning sulphur. In the Channel Islands fermentation is allowed to take place in open vessels, the vessels being simply covered with a cloth, and the scum removed as it is formed. The clear liquor is then racked into sulphured casks, and if fermentation should again set in the operation is repeated. In America the same method as that adopted in England is usually carried out, with the addition of a little finely-powdered charcoal to each barrel when the liquor is racked off.

After fermentation, the liquor will not always be found sufficiently clear, owing to the mucilage present, as the richer the juice the greater difficulty to obtain a bright liquor. In order to clear it, it is only necessary to dissolve from 1 ounce to 1½ ounces of isinglass in a little of the cold liquor and add it to the cask. This quantity is sufficient for 100 gallons. The same amount of fish-glue or the whites of a dozen eggs will answer the same purpose.

It will be noticed in the list of apples given that against some of them is placed the remark, "Cider turns black in the cup." This is due to the presence of a salt of iron in the liquor. The iron may not have necessarily come from any contact of the juice with that metal during the process of manufacture, as, according to experiments made in France, it appears that some particular kinds of fruit grown on a red soil take up the iron from it.

The liquor having been safely carried through its process of fermentation, nothing now remains for the cider-maker but to let it stand in the casks, at as an even temperature as possible, until the following spring, when it should be either racked off into smaller casks to be sent out to the consumer, or bottled. In racking off into smaller casks, great care should be taken that they are perfectly clean and free from any smell. They should be absolutely without odor, or the liquor will take it up, when all the labor and care previously taken will be lost, for no fermentation or re-racking will bring back to the cider its agreeable perfume when once lost.

In bottling, the best bottles to use are champagne ones, as they are much stronger and not so liable to burst as those of other shapes. Good cider will keep in casks four or five years, and formerly it was the practice to bottle the liquor when it was a twelvemonth old — that is to say, the cider made in the autumn of one year was bottled in the winter months of the following year. This practice, however, has now become obsolete, and it is the general custom to bottle the liquor in the April and May after it is made. A few more bottles are burst probably by this arrangement, but the liquor gains in richness and comes more quickly into the market. The best method of bottling is to remove the bung out of the cask the evening before, and, the bottles all being ready, in the morning to draw off and fill them all before commencing to cork. The corks must be of the very best quality, and after corking and wiring, the bottles, should, if possible, be put in sand for a short time before laying them down in the bins. Many small makers, when laying down for their own consumption, rinse the bottles out with a little brandy, draining each bottle as dry as possible, a bottle of brandy being sufficient for a cask of cider. In France this is a general custom.

Perry.—The process of making perry differs somewhat from that of making cider. In the first place, as a general rule, pears are fit for grinding as soon as they fall from the tree, and therefore, with the exception of a few late sorts, they must not be placed in heaps where they would rot and ferment, but be carried straight from the trees to the mill. After grinding and pressing, the liquor is fermented in open vats, and as soon as the active fermentation has subsided and the liquor is lying "between the two lees" it is run off into casks and treated in exactly the same way as cider. Theoretically this is perfect; but in practice it will be found that perry, in nineteen cases out of twenty, never fines so well as cider between the lees because of the greater quantity of mucilage perry contains, so that, in order to fine it, it is necessary to filter the liquor through "forfar" bags.

Having thus far brought the whole question, from the sorts of fruit used to the bottling of the liquor, before the reader, it only remains to consider that very essential side of the question, namely, the paying one. Here statistics are of no avail, so the writer will endeavor to give the opinions of a few practical men who have made the subject the consideration of their lifetime.

Much, of course, will depend upon the grower himself, whether he really puts his whole energies into his fruit trees, fully resolved to make them pay, or whether he simply looks upon his orchard as quite a secondary consideration, and cultivates it in a *dilettante* sort of a way. As a rule, the best cider has hitherto been generally made by small growers who are dependent to a very great extent upon their trees for their livelihood, the large farmers, with few exceptions, not giving the subject sufficient attention.

The price of cider and perry, like that of everything else, depends upon its quality, condition, and the kind of season it has been, good, bad, or indifferent. At the present time the price of best quality cider in cask is about 1*s.* 6*d.* per gallon, and the same quality bottled will realize, say, 10*s.* per dozen. Second quality cider, for household use, on draught, will realize 8*d.* per gallon, while ciderkin, or "purre," for farm use, will sell at about 2½*d.* per gallon, and perry about the same prices. These prices vary but little from year to year at the time of production and sending out, that is, from November to the following April or May; but after bottling, prime cider of a good vintage year will fetch a high price. The writer has seen both cider and perry realize 30*s.* per dozen at public auction, and some cider and perry which had been forty years in bottle could not be purchased at any price. One pound a dozen is not at all an uncommon price for first-rate cider or perry the first season's making.

Taking the orcharding on a farm at fifteen acres, this area, if planted in the manner described in this paper with good sorts of fruit, will contain about 750

trees. Of these a few, as the Cherry Pearmain, etc., will be of use as soft fruits, so one-sixth may be taken from them. This would give 625 trees the fruit of which would be available for cider or perry making. Taking an average of years, these trees would yield 100 hogsheads or 10,000 gallons of liquor, which at the moderate price of sixpence per gallon would be worth £250. In addition to this there would be the soft fruit for sale, and the profit which may be obtained from the ground upon which the trees grow.

It has always appeared to the writer a very great pity that, besides the neglect shown to the orchards, such very little attention is paid to provide suitable buildings throughout the orchard districts of England in which both the fruit and liquor could be stored. In both France and America they are far before us in this respect, every orchard farm being well supplied with proper buildings. In the latter country, by means of simple contrivances, they manage to keep their fruits at a temperature just a little above the freezing point, in such a condition that they can be placed upon the market at any time; and upon farms where cider and perry are made these houses are used for manufacturing and storage purposes.

The writer has been favored by Mr. H. C. Mewburn with the following description of the orchard and cider houses in Canada, which will probably be found of general interest:

"I will describe the premises which I occupied some years ago when I used to make cider. There was a large barn, in which the apples were stored round the sides; on the floor was a cider-mill, which was worked either by hand or horse power. Under the floor of the barn was a large cellar, round which were placed the cask and vessels to be used in the making. As the fruit was ground, it fell through the floor and was passed into casks or tubs placed to receive it until it had commenced to ferment. In the center of the cellar was the press."

The process afterwards adopted was exactly the same as has been described previously in this paper.

That similar buildings should be provided upon all fruit farms in England there can be no two opinions; but how they are to be obtained is quite another matter, although one which should be seriously entertained by both landlord and tenant. The buildings themselves need not be expensive; plain, thick walls of stone, or double walls of brick, with a good thick thatch, would answer every purpose; and where possible the building should be so arranged that the liquor should not have to be carried at all from the press to the casks, but should be allowed to flow by gravitation to those vessels in which it is to be fermented and then be racked off into the other casks, in which it is either to remain for bottling purposes or to be sent to the consumer.

Cider and perry factories have for a long time—considerably more than a century—been talked of, and the subject is one well worthy of the consideration of a cider or perry producing district. The capital required would not be large, and in a year when a good hit of fruit took place it would all be used, instead of the greater part wasted as at present. It is precisely at such a time that the want of such factories is felt, because a good hit means not only a good crop, but the crop well ripened and in good condition, and therefore first-rate liquor. At the present time many farmers and cider-makers will buy up all the first-class fruit they can lay their hands upon, or, at any rate, as large a quantity as will fill the casks with liquor which they can store; but they will not look at fruit of an indifferent quality, which proves the necessity so strongly insisted upon in this paper of growing none but known and approved sorts.

In all the above operations cleanliness is above all the one thing needful. Without it, no matter what care has been bestowed upon the other operations, all the labor will be in vain. The greatest attention should therefore be paid to every machine and utensil used for the purpose of making or receiving the liquor. Attention should be given to the temperature of the house in which fermentation is carried on, keeping it as near 60° Fahr. as possible. Water should never be added to the liquor in order to make more of it, and, above all, chemicals should in no circumstances be used in any of the processes, unless as a last resort.

This is a question which strongly affects all agriculturists, whether owners or occupiers. Corn and cattle nowadays hardly pay for rearing or growing, but orcharding and the production of cider and perry is one of the many smaller farming operations which will well repay attention. Rents, possibly, are higher and our seasons more uncertain than those of France and America, but these disadvantages are counterbalanced by the smaller expenses of packing and carriage and loss from deterioration or injury. In the neighborhood of large towns there is always a sale for hardy fruits, and those who have not that advantage can turn their energies to cultivating these fruits for cider and perry purposes. There are many advantages attending it, especially at the present time. There are now no restrictions whatever

on the production of these liquors by taxation or on their sale direct from the orchard, and the small amount of alcohol which they contain will always militate against their conveyance from a distance.

Every encouragement should be given to the practice of fruit-growing on an estate, and, if possible, the subject should be taught in elementary schools. The late Professor Henslow introduced the subject in his village school in Cambridgeshire, and the writer owes his taste for it to the fact that, as a choir-boy in Oxford, he was given a small patch of land at the back of the school to cultivate in common with the other boys, who had similar patches, and which was a source of endless amusement and also a little profit. The keen competition of the present day must be met by the farmer with greater economy, higher cultivation, and indomitable perseverance, and by attention to these there is little fear but that the British farmer will hold his own.

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CONSULS OF THE UNITED STATES

No. 107.—AUGUST, 1889.

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ON

COMMERCE, MANUFACTURES, ETC.

No. 107.—AUGUST, 1889.

COMMERCE AND INDUSTRIES OF SALVADOR.

REPORT BY CONSUL TUNSTALL, OF SAN SALVADOR.

The consular district of San Salvador embraces, in effect, the Republic of Salvador, an area estimated at 7,225 square miles, with the supervisory consular office at the capital and the three consular agencies or dependencies at the ports of Acajutla, La Libertad, and La Union, the extreme eastern, southern, and western confines of the Republic, through which all the commerce, the products, and merchandise of the country have their exits and their entrances.

In order to present the most valuable and reliable information of the trade and commerce, and the financial condition of this Central American state, I avail myself of the review of the subject furnished by Minister Mendet (secretary of the treasury), in his annual message to the National Assembly. He embodies in his memorial the following interesting table of statistics of the imports and exports for the year 1888, as compared with the previous year, and the amount of revenue derived from such sources:

Year.	Imports.	Exports.	Revenue from customs.
1888	$4,081,547.29	$6,657,605.59	$2,187,976.43
1887	3,275,024.99	5,230,194.38	1,795,378.53
Increase	806,522.30	1,527,411.21	392,597.90

This illustrates by figures that the trade and commerce of this consular district is on the increase, and indicates progress and augurs national prosperity for the Republic of Salvador. I glean from the same source of informa-

tion the following data of the export trade during the period to which this report refers (1888):

Coffee	$4,589,197.19
Indigo	1,404,770.00
Sugar	196,359.50
Bullion:	
Gold	38,000.00
Silver	171,313.00
Coin	97,150.00
Total	6,496,789.69

TRADE WITH THE UNITED STATES.

To demonstrate what proportion of the foregoing trade and commerce was shared by the United States during the period embraced in this report, I present the following catalogue of articles, alphabetically arranged, with their values annexed, showing briefly their proportion of the import and export trade of this country, rich in all the tropical productions:

Imports from the United States in 1888.

Articles.	Packages.	Value.	Articles.	Packages.	Value.
Articles free	2,580	$36,750	Liquors	655	$9,177
Beer	1,495	10,273	Matting	86	3,881
Books	11	332	Machinery	1,120	22,931
Candles	171	405	Marble (wrought)	10	39
Coin	50	67,452	Petroleum (kerosene)	4,091	11,462
Cotton goods	1,839	96,818	Perfumery	178	4,087
Cotton in hanks	15	572	Shoes and material	16	516
Crockery	39	603	Silks (in goods and hanks)	94	21,627
Drugs and medicines	3,800	38,344	Stationery	159	7,012
Eatables (in cans)	4,335	20,745	Sundries	10,171	45,527
Flour	55,973	213,455	Twine	147	1,208
Furniture	553	10,001	Wines	2,037	15,757
Glass-ware	308	2,551	Woolen goods	9	763
Hats	17	756	Woods (cubic feet)	20,180	10,014
Haberdashery	304	3,172	Total		701,209
Hardware	6,131	44,355			
Jewelry	5	624			

Exports to the United States for 1888.

Articles.	Quantity.	Value.	Articles.	Quantity.	Value.
Balsam ..... cases	91	$9,504	India-rubber ..... cases	238	$14,869
Beans		8	Minerals		3,110
Coffee ..... quintals	90,877	1,924,241	Muscovado		6,047
Cocoa		198	Rice		45
Chocolate		12	Silver (in brute)		495
Gold (in brute)		38,000	Sugar		6,226
Hides:			Sundries		152
Ox ..... bales	641	8,807	Woods ..... pieces	46	1,200
Deer ..... do	145	7,324	Total		2,092,388
Indigo ..... serroons	482	72,150			

IMPORTS AND EXPORTS BY COUNTRIES.

This shows that of the import trade of $4,081,547.29 the United States contributed $701,209.30, and of the export trade of $6,757,605.59 the United States received $2,092,388.87. Imports from Great Britain, $1,235,712; from France, $344,693; from Germany, $290,278; the remainder came from the smaller European and neighboring South American states, England alone exceeding us in this branch of the trade.

Distribution of the exports.

To—	Amount.	To—	Amount.
United States	$2,092,389	Costa Rica	$68,582
England	1,572,242	Colombia	57,763
Germany	1,110,978	Russia	40,302
France	1,004,937	Guatemala	37,437
Italy	379,894	Ecuador	24,150
Nicaragua	127,841	Spain	11,077
Chili	90,300	Honduras	6,986
Peru	77,560	Switzerland	4,500

TARIFF CHANGES.

In connection with matters commercial, I deem it appropriate to append hereto a list of articles prohibited by the tariff of Salvador and a list of those declared free of duty by a recent decree of the National Assembly, a translation of which I inclosed in a former dispatch.

Articles prohibited. — All apparatus for making money, all obscene figures, prints, and pictures; arms and other war material, such as rifles and revolvers of 44 caliber and the cartridges; air-guns, counterfeit money, dynamite and nitro-glycerine (except by special permit from the Government), nitrate of potash, or saltpeter, and loose powder of all kinds.

Articles free of duty. — Live animals, for breeding or otherwise; anchors and girtlines, apparatus for electric lights, etc., apparatus for distilling spirits, articles for the use of diplomatic ministers, all wharf or mole material, all telegraph and telephone material, all railroad material, bricks for foundations or basements, beams, boats, launches, and their tackle; barbed wire and hooks for fencing, baggage and utensils for the use of parties engaged in works of art, buildings of wood and iron, coal (stone) for fuel, corn, diamonds (unmounted), exotic plants of all descriptions, fragments of shipwreck, hops, hay, and all other forage; guys for mining purposes, guano and all other fertilizers, gold and silver in bars, dust, or coin; lodestones, models of machinery and buildings, molds for making flowers, minerals, merchandise samples, newspapers (loose or bound), plows, photographs, portraits of residents, paper for music and pieces of music, paper for printing purposes, printing material, printed books and pamphlets, quicksilver, quinine, rye, rice, Roman cement, sugar kettles, seeds, stoves for assaying metals, and woods of all kinds,

AGRICULTURAL.

The year 1888 was not a prosperous crop year for Salvador. Its principal products for export, viz, coffee, sugar, and indigo, showed a deficit of 25 per cent. when compared with the crop of the previous year, ascribable to unfavorable seasons and climatic influences. The indigo was unusually behind the expectations of its producers, not only from the causes above referred to, but from the depredations of a species of locust (called, in the language of the natives, *chapulin*), which invades, at times, this region and preys, not only upon this crop, but, like the locust of Egypt or the grasshopper of Dakota, devours all things green that it encounters in its march.

Now that plows and agricultural implements, by a recent decree of the National Assembly, are admitted into Salvador free of duty, a fine opportunity presents itself to enterprising manufacturers for their profitable introduction, and merits a consideration and should invite their attention.

INDUSTRIAL.

There are no industries to mention that would mark any noteworthy progress beyond the primitive, domestic handiwork of the native artisan. There are no breweries, no sugar refineries, no cotton-mills. There are but three sugar-mills that deserve notice here, those of Mr. Bogen, Mr. Malender, and Mr. Orellano, all in the department of San Salvador, where the crude sugars (muscovado) are manufactured from the cane of the district. The distillation of ardent spirits is a Government monopoly and one of its chief sources of internal revenue.

RAILROADS.

Of these great highways of modern civilization there are but 35 miles in actual operation, with a few more in process of immediate construction, and many more in the contemplation of the Government. This little line of road, leading in the direction of the capital, runs out from Acajutla, the extreme southwestern sea-port of Salvador, to the village of Ateos. This point has but recently been reached and a depot established.

Although there have been many concessions or grants made by the Government to parties to construct railroads through sections of its territory it seems that the peculiarly rugged topography of the country has hitherto interposed insuperable obstacles to the consummation of their plans and purposes. The Government, however, being the proprietor of a section of this road and of a large interest in that over which it does not exercise exclusive supervision (with the reserved right to purchase at will), appreciating the needs of its people and the advantages of the prompt and rapid interchange of products and commodities, has set to work on its own account to extend this line of road to the capital, and the work is being executed under the direction and supervision of an enterprising American, Mr. Brannan. It is contemplated by the Government to extend this road, when circumstances favor, through its entire length of territory, making La Union, which is one of the finest harbors on the Pacific, at the base of the great mineral

district of San Miguel, its other terminus. In the meanwhile the road will have traversed one of the richest mining and agricultural districts (now almost unexploited) in all Central America. When this work shall have been accomplished, in connection with the prospective construction of the Nicaragua Canal, a new era will dawn upon this corner of the western hemisphere.

TELEGRAPHS AND TELEPHONES.

There are now eighty-three telegraphic stations in the Republic. Ten additional stations were established during the past year whereby the lines were extended 165 miles, making a total of 1,443 miles of telegraphic communication within a compass of 7,225 square miles. During the period to which this paragraph alludes a system of telephonic intercourse has been likewise introduced and organized with three central offices—one at San Salvador, one at Santa Ana, and the other at Santa Tecla, or New San Salvador, with eighty-eight apparatuses in use, twenty-five of which belong to the Government. This is the first of the Central American republics that has established telephonic service throughout its territory, all of which work displays a commendable spirit of enterprise and denotes progress.

BANKING FACILITIES.

The principal banking institution is the International Bank of Salvador, established in 1880 with a subscribed capital of $1,000,000, and as an evidence of the confidence of the public in its solvency and management it had in circulation on the 31st of January last $1,148,261. It had its branches at several points in the Republic. There are, besides, several private banking houses, the principal one being the large banking house of Blanco & Trigueros, located here. In addition to the above banking facilities the National Assembly of Salvador has just granted a franchise to a Mr. Morris to establish a bank or syndicate to loan money on farm lands and tenements, somewhat of the character of a class of syndicates now operating in our Southern States, whereby the farmer will be able to procure money on longer terms and at lighter rates of interest than can be effected through the regular banks of exchange and discount.

EDUCATION.

Educational facilities are ample, and the Government is expanding its work in that direction from day to day. The system of public instruction is admirably organized. The primary schools, institutes, colleges, and the National University, which has the finest laboratory of chemistry and mineralogy in Central America, are all thoroughly equipped with competent teachers and learned professors, where the youth of Salvador, native and alien, can acquire, free of expense, not only the rudiments of education, but a thorough course of literary and classical instruction lies before him. A practical knowledge of engineering, civil and mining, may be learned. Music and the languages, ancient and modern, are taught in the higher schools, and the degrees of doctor of laws and doctor of medicine are conferred by the

National University. During the year the Government organized two normal colleges, one for males and the other for females, and these, in their appointments, have no superiors in Central America. President Menendez is a zealous advocate and a generous patron of education, and during his official career has devoted much time and attention to practical plans for promoting the education of his people, and with the modern improvements recently introduced with that view the system may now be deemed most complete and satisfactory.

Of the 664,513 inhabitants of Salvador (a fraction of over 90 to the square mile) there are, by the last census, 84,741 children between the ages of six and thirteen, of which number 27,342 (about 33 per cent.) attended the public schools during the year 1888. The Government disbursed on that account the sum of $273,478.18, paying over $20,000 rent for tenements for school purposes in addition to those owned by it. This review proclaims the progress made in this department of the public service and the interest manifested by the administration in the cause and advancement of popular education.

NATIONAL EXPOSITION.

The national exposition that opened and closed in November was a marvelous exhibit of the intrinsic resources of the country, mineral and agricultural. The exhibit of fossil remains, the rare specimens of petrefaction, the brilliant flora, the infinite variety of medicinal plants indigenous only to the tropics, with other specimens of its rich and wonderful botany, presented a *tout ensemble* attractive beyond description. An idea of the extent and variety of its wealth of woods may be conceived from the statement that there were no less than six hundred samples, all of beautiful fiber and texture and susceptible of a high degree of polish not to be surpassed by the forest resources of any country for all the practical purposes for which woods can be used. One of the distinguishing features of the exposition was the variety of specimens of domestic handiwork, such as saddles, shoes, silk shawls and veils, works in shells and flowers, all indicating the ingenuity, taste, aptitude, and dexterity of the native artisan. All this brilliant Central American show has gone to the Paris Exposition.

INCOME, EXPENDITURES, AND INDEBTEDNESS.

I deem it not inappropriate to refer to the income, the expenditures, and the indebtedness of the Republic. The following items are reliable, having been furnished me at the treasury department of Salvador, and refer to the year 1888:

Income from all sources	$3,794,709.42
Expenditures during the year	3,667,782.89
National debt	6,739,865.44

Postal facilities are ample and well regulated. The Pacific Mail line of steamers from San Francisco to Panama, which this little Republic "aids and

comforts" with a subsidy of $24,000 per annum, and a line of coast steamers from Mexican ports to and fro make the connection at frequent and regular intervals with the European and American Atlantic mail steamers at the Isthmus, as well as with all the Pacific and Atlantic South American States, thereby affording prompt and efficient postal communication with all the world.

T. T. TUNSTALL,
Consul.

UNITED STATES CONSULATE,
San Salvador, July 4, 1889.

COSTA RICAN STATISTICS.

REPORT BY CONSUL WINGFIELD, OF SAN JOSÉ.

PUBLIC DEBT.

Exterior debt. — Five per cent. coupon bonds, held in England, interest payable semi-annually on January 1 and July 1. Principal, $10,000,000.

Interior debt. — Paper issued by the Government, $870,245; floating debt, $1,085,119; total, in Costa Rican currency, $1,955,364; in United States gold, $1,396,831. Total debt, in United States gold, $11,396,831.

The interest has been paid up promptly on the foreign debt, and Costa Rican bonds are quoted in London above 90. Comparing the increase of the floating debt with the decrease of the same, the net increase for the past fiscal year is, in United States gold, $89,395.

RECEIPTS AND EXPENDITURES.

Treasury receipts and disbursements for the fiscal year ending March 31, 1889, were as follows: Disbursements, $3,939,997 ($2,814,283 American); receipts, $3,687,594 ($2,633,995 American); deficit, $252,403 ($180,288 American). This deficit includes treasury warrants in circulation at the end of the fiscal year.

EXPORTS AND IMPORTS.

The exports and imports of Costa Rica during the year 1888 were as follows: Exports — Coffee, $4,742,253; bananas, $530,765; hides, $64,268; rubber, $11,388; shells and mother-of-pearl, $18,390; coin, $259,004; sundries, $87,724; total, $5,713,792 ($4,081,280 American); imports, $5,201,922 ($3,715,658 American); excess of exports, $511,870 ($365,622 American).

The above statement shows a balance of trade in favor of Costa Rica, but when it is considered that in 1888 more than $200,000 of coin was sent abroad; that, practically, there is no coin left in the country outside of the bank reserve, and that the Government sent, in 1888, the equivalent of $500,000 in United States gold to pay interest on its English debt, it follows that the balance of trade is really against the country. This is shown by the continuous upward tendency of exchange for the past six months. In 1888

exchange on New York could be bought up to December 15 for $1.35; now it is worth $1.55. Should the prices of coffee, the staple export crop of the country, go down the balance of trade would be still greater against Costa Rica, even though the growing coffee crop should prove a good one, as is now expected.

BANKS AND CURRENCY.

There are two banks regularly organized—the Anglo-Costa Rèceuse Bank, an old established bank of deposit and discount, having a paid-up capital of about $1,500,000, and the Union Bank, which has the right under its charter to issue paper money to the extent of four times its paid-up stock, the limit of its stock being $1,000,000. It has a paid-up capital of about $800,000 and a paper circulation of about $3,000,000. The Government formerly issued treasury notes, but since the charter was granted to the Union Bank, about four years ago, no paper money can be issued except by it, and the Government is retiring its paper notes at the rate of about $100,000 each year.

J. RICHARD WINGFIELD,
Consul.

UNITED STATES CONSULATE,
San José, July 18, 1889.

GOVERNMENT MONOPOLIES OF HONDURAS.

REPORT BY CONSUL HERRING, OF TEGUCIGALPA.

The Government monopoly articles of Honduras are gunpowder, tobacco, cigars and liquors, native and foreign. The amounts of the "monopoly articles" sold throughout the Republic in the several revenue districts will be seen by statement No. 1 annexed hereto. Statement No. 2 shows the gross sales, expenses, and profits derived from those monopolies. Statement No. 3 shows the imports of foreign liquors and the duty collected thereon.

The population of Honduras at the last census (1887) was 331,917. Of these 163,958 were men and 168,842 were women.

From the foregoing facts, all taken from official sources, may be determined whether there is any opening for our manufactories of said monopoly articles, considering, of course, the desire of the Government to protect its own monopolies by high tariff against foreign importations of these or like articles. A reasonable conclusion may also be reached as to the amount of intoxicants consumed per head by the inhabitants, and whether the people are of sober habits or not, and this, too, without the consul treating upon the subject of the habits or the morals of the people.

The Government of Honduras retains complete and absolute control of the liquor traffic at all times and at all places, and no trouble need ever arise from the Government regulation of when, where, or how to buy or sell intoxicants. The Government may suspend or order its sale at any particular time or spot, or to any particular individual or class, without fear of any ques-

tion of class legislation, or of its right to do so in any way, even to the commencement of its sale in the morning at a certain place and stopping it before night there or anywhere just at any time it may seem best.

1.— *Statement showing the amounts of gunpowder, tobacco, cigars, and aguardiente (Government monopolies) reported sold at the several revenue districts in Honduras during the fiscal year 1888.*

Districts.	Gunpowder.	Tobacco.	Cigars.	Aguardiente (rum).
	Pounds.	*Pounds.*	*Number.*	*Bottles.*
Amapala	11	2,894⅛	406,463	15,136¾
Puerto Cortés				54
Truxillo	838	123	102,483	21,617
Ruatan	154½	9,412	877,844	6,675¾
Tegucigalpa	1,779½	7,163⅛	295,655	165,902
Santa Barbara	2,017	42,336½	3,043,994	45,477
Comayagua	660¾	11,335	960,385	33,961⅝
La Paz	546⅞	8,375⅝	628,980	25,901
Copan	1,164⅛	2,891¼	309,130	57,275¾
Gracias	824⅝	7,811¾	205,332	30,629⅜
Choluteca	1,423⅜	16,685⅞	1,808,091	47,276¼
El Paraíso	294	17,296¼	804,654	54,084¼
Yoro	1,496	6,061⅛	773,337	26,003⅛
Intibuca	534⅝	2,587⅞	212,866	21,256⅜
Olancho	1,668¾	2,207⅝	1,047,752	38,584¾
Nacaome	151	482	126,909	8,763¾
Total	13,564⅛	155,062⅝	11,603,885	598,598¼

2.— *Government profits on monopolies (fiscal year 1888).*

Articles.	Sales.	Expenses.	Profit.
Aguardiente	*$450,599	*$133,900	*$316,699
Liquors	19,793	3,394	16,399
Tobacco	248,868	134,983	103,885
Gunpowder	13,559	5,067	8,492
Total	732,819	277,344	445,475

* Peso dollar = 69.9 cents American.

3.— *Imports of liquors into Honduras, 1888.*

Liquors.	Quantity.	Value.	Duty.
	Bottles.	*Pesos.*	*Pesos.*
Cognac	12,031	9,248	10,447
Whisky	4,167	2,173	2,429
Absinthe	732	686	492
Gin	1,739	339	1,087
Rum	3,812	508	1,019
Anisette	2,828	753	2,042
Alcohol	330	73	344
Curacoa	120	90	107
Maraschino	85	56	72
Ojen	74	41	67
Cominillo	60	30	57

3.— *Imports of liquors into Honduras, 1888* — Continued.

Liquors.	Quantity.	Value.	Duty.
	Bottles.	*Pesos.**	*Pesos.**
Chartreuse	24	23	24
Champagne	1,326	1,129	461
Cider	1,379	673	698
Bitters	537	310	190
Vermoretto	11,804	4,682	3,992
Sillery wines	120	32	27
All other wines	194,552	49,332	16,709
Beer	109,042	14,483	12,900
Ginger ale	3,618	382	560
Total	338,380	85,043	53,785

* Peso dollar = 69.9 cents American.

D. W. HERRING,
Consul.

UNITED STATES CONSULATE,
Tegucigalpa, July 1, 1889.

PROHIBITION OF AMERICAN PORK IN GERMANY.

REPORT BY COMMERCIAL AGENT BRAMLETTE, OF PLAUEN.

The agriculture of the United States excels that of any other nation, and has still unbounded possibilities for development. Our manufactures are the best in the world, if not the cheapest, but our commerce is not equally good, and does not meet the ever increasing demands of our agriculture and manufactures. The products of agriculture and manufacture must be marketed or else both industries decline; in other words, our agriculture and manufactures can flourish only in proportion as our commerce flourishes.

It therefore behooves the United States to look to her commerce, and especially to remove every barrier or obstacle which is or may be put upon it at home or abroad.

By decrees of the German Government, under dates of June 25, 1880, and March 6, 1883, the importation of American hog meats of every sort was prohibited on the ground that the American hog abounds in trichinæ, and on this ground an unjust barrier is put upon an important branch of our commerce.

I have shown in my report to the Department, under date of February 22, 1888, on the subject of "Trichinosis and Trichinæ," that these prohibitive decrees were issued simply to give advantage to German commercial interests by hampering American trade in pork. For convenience of reference I inclose herewith a copy of said report.

The first decree of June 25, 1880, prohibiting the importation of chopped, ground, or otherwise prepared hog meats and sausages of American origin, did not injure our commerce to any great extent, for we continued to export

to Germany whole hogs, hams, bacon, lard, etc. But the decree of March 6, 1883, prohibiting the importation of American hog meats of every sort did untold injury to our European trade. Not only were our exports to Germany cut off by this decree, but the stigma thereby put upon our hog products had a visible effect upon our meat exports to other European nations.

EMBARGOES ON AMERICAN HOG PRODUCTS.

The decree of June 25, 1880, was made in the interest of German butchers and sausage-makers, who hoped thereby to supply Europe with prepared hog meats and sausages, even if American hogs had to be imported for their manufacture. But the census made under date of January 10, 1883, showed that the number of hogs in Germany had greatly increased since January 10, 1873, and that Germany ranked next to the United States as a hog producer.

Statement showing the number of hogs in Germany according to the census of January 10, 1883, compared with that of January 10, 1873.

Census.	Number of hogs.	To 100 inhabitants.
		Head.
January 10, 1883	9,206,195	20.1
January 10, 1873	7,124,088	17.1
Increase in ten years	2,082,107	3.0

Statement showing the number of hogs in the six chief countries.

Countries.	Year.	Number of hogs.	To 100 inhabitants.
			Head.
United States	1880	47,681,700	95.1
Germany	1883	9,206,195	20.1
France	1880	5,565,620	14.8
Austria	1880	2,721,541	12.3
Great Britain	1880	2,863,488	8.2
Italy	1881	1,163,916	4.1

Therefore, Germany showed an increase in hogs of 29.2 per cent., or 3 per cent. per annum, and ranks next to the United States as a producer.

Scarcely were these figures of the census of January 10, 1883, put together, showing the wonderful increase in the number of hogs in Germany and demonstrating that Germany would be in a position to export hogs and hog products of every sort, provided the American hog were rooted out of the markets of the world, when the idea was conceived of putting a stigma upon the American product, thus bringing it into suspicion in the eyes of other nations and making it possible to compete with the United States. Hence the decree of March 6, 1883, forbidding the importation of all American hog meats on

the charge that the American hog abounded in trichinæ. And in order to publish this charge to the world, and to bring it into notice among all other European nations, it was also decreed that no hog meat would be allowed to enter German territory, no matter from what nation it came, unless an official certificate was produced showing that said hog meat was not of American origin.

THE EFFECT OF THESE DECREES.

France, which had previously consumed large quantities of American hog meat, also prohibited American pork. Other European nations grew suspicious and bought as little American pork as possible. Hence our exports of hog meats declined, whereas those of Germany began to assume considerable importance. The following shows the effect which the decrees of June 25, 1880, and March 6, 1883, had on German imports and exports of hogs and prepared hog meats:

German imports and exports of hogs and prepared meats from 1880 to 1883.

Year.	Affected by decree March 6, 1883.		Affected by decree June 25, 1880.	
	Imported hogs.	Exported hogs.	Imported meats.	Exported meats.
	Head.	*Head.*	*Kilograms.*	*Kilograms.*
1880	1,272,816	467,949	25,107,000	6,708,000
1881	1,365,006	396,910	20,117,000	6,933,000
1882	1,317,183	318,070	8,660,000	7,132,000
1883	1,006,670	439,130	11,694,000	8,629,000
1884	894,152	524,449	5,200,000	10,289,000
1885	658,467	441,377	5,819,000	9,834,000
1886	765,338	398,920	5,597,000	9,158,000
1887	490,455	301,670	8,883,000	10,559,000

Imports of prepared meats decreased while exports thereof increased since the decree of June 25, 1880. The decree of March 6, 1883, so affected German imports and exports of hogs that, whereas before 1883 importations were constantly increasing and exportations decreasing, after 1883 importations have continually diminished and exportations for several years increased. But the exportations of hogs from Germany could not continue to increase (1) because the temporary shyness of other nations concerning American pork began to subside after two or three years, and American pork began again to push German pork out of the market, and (2) because the production of hogs in Germany is too small to sustain a large and continuous export.

THE WORLD'S MEAT CONSUMPTION, PRODUCTION, AND COMMERCE.

The average consumption of meat the world over has increased. On the other hand the world's commerce in meats has declined. Germany's imports of meats declined from $94,450,000 in 1878 to $73,700,000 in 1887, while the exports declined from $88,300,000 to $33,900,000. In France, between

1879 and 1887, imports diminished from $82,300,000 to $53,910,000, while exports increased from $35,950,000 to $52,600,000. In England, where exports of meats are insignificant, the imports decreased from $240,250,000 in 1880 to $216,140,000 in 1887. On the other hand, the British colonies exported largely; *e. g.*, from Canada the exports increased from $4,430,000 in 1879 to $30,300,000 in 1887. Australia exported also large amounts, but the figures are not known to me. In Austria-Hungary imports diminished from $10,950,000 in 1879 to $7,920,000 in 1887, while exports increased from $20,700,000 to $33,900,000. In the United States, wonderful to relate, imports increased from $7,100,000 in 1879 to $16,650,000 in 1887, while exports decreased from $128,800,000 to $112,600,000. Importations into Belgium decreased from $16,400,000 in 1879 to $10,400,000 in 1887; in Italy, from $21,190,000 to $14,000,000; in Russia, from $18,330,000 to $10,400,000. By combining the foregoing figures the entire imports of meats into the aforesaid countries have diminished from $490,970,000 to $403,120,000, while the entire exports decreased from $278,180,000 to $244,700,000.

In 1875 Germany possessed 24,400,000 neat cattle (4 small cattle—*i. e.*, sheep, hogs, and goats—being reckoned as 1); in 1883 only 23,500,000. Between 1881 and 1887 there was in France an increase from 19,700,000 to 20,750,000; in Great Britain, from 17,800,000 to 18,600,000, while in Austria-Hungary the figures remained the same. The increase in population in these countries during this time was as follows: In Germany, 3,500,000; France, 480,000; Great Britain, about 3,000,000, and Austria-Hungary, 2,000,000. The ratio in France on account of the small increase in population is most favorable; therefore, this country could increase its exports. In Germany it is very bad, the number of neat cattle having diminished 900,000 head and the population having increased 3,500,000. But most remarkable is it in the case of the United States, where imports increased 130 per cent. and exports diminished 12½ per cent., although the number of neat cattle increased from 56,600,000 head in 1880 to 71,200,000 in 1888, and the population increased only from 50,500,000 to 62,000,000.

This stagnation in the world's meat commerce, especially the decrease of imports into Europe, is to be attributed to the arbitrary prohibitions and embargoes of the French and German governments against American pork, as also the decrease in the number of neat cattle in Germany is due to the same cause. This decrease in the neat cattle of Germany is a threatening and continuously growing evil, which is beginning now to be keenly felt among the German people.

PUBLIC SENTIMENT IN GERMANY.

It would be idle, as well as impossible, to notice all the libelous and misleading articles in German newspapers concerning the agricultural products of the United States. Numberless pamphlets concerning American productions are also printed every year by German agricultural societies and industriously circulated among the farming element, which contain a few facts,

warped out of all resemblance of truth, and much falsehood. The design of all this misrepresentation and falsehood is plain—the Germans fear the competition of the United States. I quote the closing paragraph of a pamphlet by Richard Blum entitled "The development of the United States in respect to her agricultural production":

The agriculture of the United States is evidently a strong competitor of that of Europe, and especially of Germany, in the European markets; but it can only prove dangerous if we do nothing against it, if we quietly see it increase in its competition as if it were so ordained by fate. It will, however, not prove dangerous if those expedients be resorted to which alone can render us lasting help.

This was published in 1882, and no doubt the author was gratified that his advice was taken and one of those helping expedients introduced.

A discourse made by George Richter before the Economic Society of Saxony and published in pamphlet form for general distribution, after arguing for the exclusion of American productions of various sorts, such as wheat, barley, rye, oats, corn, potatoes, etc., contains the following passage:

Concerning the importance of live-stock raising [in the United States] and the meat exports into Europe, and the effect thereof on the live-stock raising of Germany, I shall speak in my next discourse, as well as concerning the wonderful avenues of intercourse and the facilities of trade and transportation of food [in that country]. In the meantime I submit the following extract from one of our best daily newspapers as quite appropriate:

"From another American product we could easily and immediately free ourselves; it is the American canned meat, corned beef. This conserve contains the least possible amount of nourishment. A butcher of Chicago writes upon this subject to the Vossische Zeitung: 'On the labels is printed, of course, that only the best parts of the best beeves are used in its preparation; but, as a matter of fact, only the worst Texas and Colorado beeves are used for canning, and of these only the neck, shank, and flank. The thigh is salted down and shipped to England, the breast is used as mess meat on board ships, and the loin goes to the large cities on the Atlantic coast. The meat to be canned is freed from bone and fat, cooled off in the ice-house, cut into small pieces and salted, and a strong brine is poured over it. When it is salted through and through it is half cooked by steam in wooden pails, then cut up fine and put into cans. Every can, when filled, is carefully weighed, then soldered together and cooked for two hours; then a small hole is made in the can and the juice is allowed to run out. Then it is cooked again two hours and the juice is allowed again to run out. It is evident that by this treatment the nourishing value of the meat, which was at first very small, is reduced to a minimum. The two chief nourishing properties of the meat, albumen and fat, are entirely extracted.'"

I regret beyond expression that notwithstanding the most painstaking and zealous search I have not been able to obtain the "next discourse" of Mr. George Richter.

One other pamphlet, by Heinrich Lemcke, purporting to be a resident of New York, entitled "The decline of agriculture in the United States," deserves mention, on account of its malignancy and falsehood. It begins thus:

General confidence in republican institutions in the United States appears to be rapidly on the decline. Confiding faith in the republican constitution as the source of national well-being, as it once existed, is no more to be found,

He then proceeds to state that agriculture, as well as everything else in the United States, is declining at the same rapid rate, and among six reasons therefor he gives the following as his fifth:

(5) The majority of the national and municipal officials in the Union are defrauders, and under the semblance of obeying the law commit the greatest villainies and thefts. And for this reason the official statistics concerning agricultural affairs in the Union have no value whatever.

Such calumnies were no doubt paid for by the line, and are fair samples of the means made use of to foster prejudice and to mislead public opinion in Germany in regard to the United States and her productions.

CHANGE IN PUBLIC SENTIMENT.

In the last report of the Berlin chamber of commerce we read the following:

The exports of cattle from Germany to England declined greatly in 1886, viz: From 14,273 head of the previous year to 6,235 head, while the exports of ham and bacon fell from 434,585 cwt. to 337,532 cwt. Bacon has ceased to be a great article of commerce since the prohibition against its importation from America, and has lost the interest which it once attracted. On the other hand, there is a great increase in the importation of American and Australian canned meat. This meat proves itself more and more to be a cheap and practical food, and on account of its good quality can come into more general use.

Thinking Germans now acknowledge that the German prohibition against American pork has in reality been injurious to Germany.

PRODUCTION AND CONSUMPTION OF PORK IN GERMANY.

Table showing the stock of hogs in Germany on January 10, 1883, according to age and sex, with living weight.

Classes.	Head.	Living weight.	
		Each.	Altogether.
		Kilograms.	*Kilograms.*
Pigs of 1882, under one year	7,134,178	26.5	189,055,700
Sows, one year old and older	856,393	116	240,343,900
Males, one year old and older	1,215,624		
Total	9,206,195		429,409,600

In order to keep the sows young and thrifty about one-sixth of the number (*i. e.*, those over six years old) are slaughtered each year, or, in 1883, were slaughtered 142,732 sows, and this number must be filled up from the pigs of the previous year. Of the males one year old and older about eleven-twelfths are slaughtered each year, or, in 1883, 1,114,322 head, while one-twelfth, kept for breeding purposes, are slaughtered in the course of six years, or 16,880 head in 1883. The pigs of the previous year must also fill up this gap, whereas the rest of said pigs are slaughtered, or, in 1883, were slaughtered 5,860,244 head (7,134,178 — 142,732 — 1,114,322 — 16,880). This

number (7,134,178) must in turn be filled up by pigs born during the current year. Under favorable circumstances, 713,661 sows (856,393—142,732) can breed in one year 11,418,576 pigs, of which number may be slaughtered 4,284,398 head (that is, 11,418,576—7,134,178). Hence we have the entire production of pork in 1883 in the following table:

Table showing the possible production of pork in Germany during the year 1883.

Classes.	Head.	Slaughter weight.	
		Each.	Altogether.
		Kilograms.	*Kilograms.*
Pigs of 1883, under one year	4,284,398	20	85,687,900
Sows over six years old	142,732	95.5	121,660,700
Males over one year old	1,131,202		
Pigs of 1882	5,860,244	61.5	360,405,000
Total	11,418,576		567,753,600

It is evident that if the entire production of 1883 is consumed during that year there can be no increase in the stock of hogs. Now, if to the entire production we add the amount of imports and subtract the amount of exports, we will get the entire possible consumption. Thus for 1883, possible production, 567,753,600 kilograms; add imports for 1883, 111,550,920 kilograms; less exports for 1883, 51,263,520 kilograms; possible consumption for 1883, 628,041,000 kilograms. In this way the following table shows the possible production, the imports and exports, and the possible consumption of pork in Germany for a series of years. Before 1883 allowance is made for the 3 per cent. annual increase in the stock of hogs.

Table showing the possible production, actual imports and exports, and possible consumption of pork in Germany from 1880 to 1887, without diminishing the stock of hogs.

Year.	Production.	Imports.	Exports.	Consumption.	Population.	Per capita.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*		*Kilograms.*
1880	516,655,800	142,278,900	51,749,400	607,185,300	45,093,000	13.47
1881	533,688,400	144,793,940	43,673,480	634,808,860	45,426,000	13.98
1882	550,721,000	123,695,480	37,542,320	636,874,160	45,717,000	13.93
1883	567,753,600	111,550,920	51,263,520	628,041,000	46,014,000	13.65
1884	567,753,600	86,578,500	61,409,700	592,922,400	46,334,000	12.79
1885	567,753,600	64,895,660	52,886,660	579,762,600	46,705,000	12.41
1886	567,753,600	70,324,720	38,473,840	599,604,480	47,103,000	12.72
1887	567,753,600	42,596,160	39,668,920	570,580,840	47,516,000	12.00

Therefore, the per capita consumption since 1883 has greatly diminished if the stock of hogs has not diminished. To have increased the stock of hogs the per capita consumption must have diminished still a great deal more. Some authorities assert, however, that the per capita consumption has not decreased since 1883, but, on the contrary, has slightly increased. If so, it has been at the cost of the stock of hogs; for, assuming that the per capita con-

sumption has remained the same since 1883, viz, 13½ kilograms, the follow-lowing table will show how the stock of hogs must have greatly decreased:

Table showing how the stock of hogs must have greatly decreased if the per capita consumption has not decreased.

Year.	Production.	Production.*	Consumption at 13½ kilograms per capita.	Decrease in stock of hogs at 100 kilograms apiece.	Decrease in production for following year.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Head.*	*Per cent.*
1883	567,753,600	628,041,000	628,041,000	.....	.....
1884	567,753,600	592,922,400	625,509,000	325,866	4
1885	545,044,000	557,052,500	630,517,500	734,650	10
1886	490,540,000	545,100,000	635,890,000	907,900	14
1887	421,865,000	502,106,000	641,466,000	1,393,600	26

* Including imports.

The total decrease in the stock of hogs was 3,362,016. Continuing at this rate there would scarcely be a hog left in Germany at the end of 1889. Hence it is evident that the per capita consumption of pork in Germany has decreased since 1883. But both the per capita consumption and the stock of hogs have decreased, and the truth lies as a compromise between the two last tables. I will now compare the consumption of pork in the cities with that in the country.

Table showing the per capita consumption of pork in twelve German cities, an average being made for several consecutive years.

City.	Per capita.	City.	Per capita.
	Kilograms.		*Kilograms.*
Berlin	39.15	Frankfort	22.95
Munich	31.79	Chemnitz	21.35
Cologne	22.95	Stuttgart	20.36
Dresden	22.43	Nuremberg	40.81
Leipsic	28.73	Bremen	30.06
Brunswick	46.80	Crefeld	19.79

The average of these twelve cities is 32⅓ kilograms per capita. Authorities state that the average per capita consumption of pork by the city population of Germany is 28 kilograms, hence we can calculate the per capita consumption of the rural population, as follows:

	Kilograms.
Total consumption for 1887	570,580,840
City population, 13,500,000, at 28 kilograms	379,400,000
Rural population (33,966,000) consumed in 1887	191,180,840

This makes the per capita consumption of pork by the rural population of Germany to be 5.7 kilograms. When it is remembered that beef is a luxury in which only the wealthier class of the rural population can occasionally indulge, and that of these 5.7 kilograms of pork the greater part is consumed

by the wealthier class, it will be seen how poorly fed are the poorest of the rural population of Germany. Only on festival occasions can the poor farm-hand have a bit of meat for dinner. Just think, 5.7 kilograms (12½ pounds), about 26 square meals; hence the rural population of Germany can have meat for dinner only once every two weeks. No wonder there is beginning to be a change of sentiment in Germany in regard to American pork.

It must be said to the praise of our commercial methods that we have never tried to injure the commerce of another nation in order to find a market for our products, and that whatever trade we have was built up by force of the cheapness and superiority of those products. It can not, however, be much to our honor that we have tamely and with apparent indifference allowed one of our greatest commercial products to be driven from the markets of the world. It is poor consolation to say that Germany has also injured herself in trying to injure us. The fact still remains that our people have been commercially injured by unjust prohibitory decrees. This injury the great agrarian element in the United States feels to this day in fact, for it no longer properly pays the American farmer to raise hogs for sale.

But we return good for evil by admitting German sausages free of duty (United States Treasury Decisions for April, 1889, No. 9340). This German embargo on American commerce continues in force. Shall it be perpetual? The United States must sooner or later, in justice to her agricultural population, take steps to have removed this barrier or obstacle put on our commerce. Our commerce must flourish or our agriculture and manufactures must decline. To summarize:

(1) Germany has put unjust embargoes on and stigmatized one of America's chief products.

(2) The said embargoes, like two-edged swords, cut both ways, not only injuring American commerce with all Europe, but also robbing the German people of a large portion of their already small amount of meat, although at first benefiting German commerce.

(3) Through these German embargoes (and that of France) the entire meat commerce of the world stagnated and declined.

(4) The United States must now look to her commerce and remove all commercial obstacles, or else her agriculture and manufactures must decline. The question, "Shall the United States longer submit to having her commerce thus hampered and embargoed?" is now pushing itself to the front.

EDGAR E. BRAMLETTE,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Plauen, June 21, 1889.

TRICHINOSIS AND TRICHINÆ.

[Report by Commercial Agent Bramlette referred to in foregoing report.]

Time was when the consumption of meat in Germany was estimated at 92 pounds per capita per annum, but statistics now show that the average consumption is only 44 pounds. This great shrinkage in the consumption of meat in Germany dates from the embargo placed on the importation of American pork, which raised the price of this staple beyond the reach of a large portion of the people. I borrow the following from the American Exporter, because it states the case exactly as I find it:

"The meat showing at the recent culinary exhibition at Leipsic bore testimony to the fact that meat is still a luxury in that country which only the upper and middle classes can enjoy. To the poor man it is impossible, and will remain so while expensive English mutton is permitted to be imported and cheap American pork prohibited. The question is, whether it was not so intended by the German Government. Meat is not for the common people, they grow too great thereon, as did Cæsar.

"Our direct exports of meats and cattle and swine products to Germany were as follows during the year 1886: Canned beef, $210,000; corned beef, $146,000; oleomargarine, $100,000; bacon, $121,000; lard, $4,126,000; salted pork, $57,000; all other, $20,000; total, $4,837,000.

"Not only could the United States supply pork which the German people could buy, but they could also supply canned and corned beef were these articles not taxed by duties so as to bring them just above the working-man's capacity to buy. Although the consumption of pressed and corned beef is considerable, the price is too high to bring these articles down to general consumption."

The average German can not understand this; he is simply told by those in authority over him that to eat American pork is death, and he believes it and feels very grateful for such parental care of his health.

But what is the real state of the case? The American laborer eats American pork all the time, in every shape, form, and fashion, and still lives in health; on the other hand, if a German happens to indulge in an unusual bit of luxury, and treats himself to a piece of German pork or sausage, he does so at some risk.

This is sadly illustrated in this consular district, a four months' siege of trichinosis having just ended, the last victim dying on February 2, 1888, after fifteen weeks of suffering. In Reichenbach, Hainsdorf, Unterhainsdorf, Oberreichenbach, Lauter, Neumark, and other neighboring towns twenty-six people have died of trichinosis, and one hundred and seventy others barely escaped with their lives, and one poor fellow, who saw there was no hope for him, hanged himself to put an end to his misery. Many others were slightly sick. The suffering of these poor people beggars description. Only four years ago a similar epidemic occurred in this same neighborhood.

But another and more dreadful epidemic of this terrible disease is still raging near Dresden in Cunewalde, Obercunewalde, Lauban, Loebau, and other villages. This began about the middle of January, 1888, and no one can predict when the end will be. More than two hundred persons are sick, and thirty have already been numbered with the dead, and day by day the death list increases.

In all these cases trichinosis originated from the eating of German trichinous pork and sausages, some of which has been examined, and in two pieces of meat no larger than a pin head sixteen trichinæ were found.

Since 1860 there have been one hundred and nine epidemics of trichinosis in Saxony, during which more than thirty-four hundred persons were sick of this fell malady, and I do not know how many deaths have occurred. Only since 1876 there have occurred seventy of the epidemics, or about six epidemics per annum, showing a constant increase from year to year both in the frequency of their occurrence and in fatality. I have no statistics for the whole German Empire, but I may mention on good authority that outside of the Kingdom of Saxony these epidemics occur with equal frequency and with as fatal results. This increase in the

frequency of trichinosis in Germany, coupled with the fact that the consumption of meat has decreased more than half during the same period of time, seems doubly remarkable.

The instances are numberless where trichinæ have been found in slaughtered meat before any one was unfortunate enough to have eaten of it. Within the last few weeks five such instances have occurred in Plauen; thirty instances in Greiz during the past year; one in Mylan only a few days ago, where several persons had actually eaten some of the meat before the trichinæ were discovered, and these persons are now under medical treatment; one instance only yesterday in Hof. It would make a list long enough to span the Atlantic if every instance during one year were given where trichinæ have been found in slaughtered German pork, thus preventing epidemics of trichinosis.

What is trichinosis? It is the sickness caused by certain tiny hair-like worms penetrating from the stomach and entrails into the muscles and tissues of the body. The mere presence of trichinæ in the stomach or muscles would not cause much trouble, but it is their boring through muscles and tissues that causes trichinosis. Their sharp-pointed heads are their daggers of death.

What are trichinæ? About fifty years ago this tiny parasite was first discovered, and named from its resemblance to a coiled hair *Trichina spiralis*. It has existed, no doubt, ever since filth has existed, for its origin is to be attributed to filth; but on account of its smallness it had not been observed sooner, twelve thousand being able to lie on the head of a pin, and three hundred million weighing only 1 ounce.

The male is about 1.5 millimeters long, and is distinguished from the female by a double projection at the larger end. He dies almost immediately after sexual intercourse. The female is from 2 to 4 millimeters long, and is about ten times as numerous as the male. The larger end is the ovarium, containing myriads of eggs, the uterus being about one-third of her whole length from the larger end. The eggs, however, are not spawned, but break while moving toward the uterus, and are born living trichinæ. These embryo trichinæ, about 0.1 millimeter long, bore through the walls of the stomach and entrails and scatter out into the muscles of the body. After wandering a week or two through the muscles and tissues they grow weary of their arduous travels, coil up and encase themselves finally in shells of chalk. This encasing process begins about six weeks or two months after the trichinæ have left the stomach and entered into the muscles, and continues gradually, the shells becoming more and more opaque, until, after about one year and a half, the trichinæ are entirely hidden from view. These shells are visible to the naked eye, appearing like tiny dots on a muscle. After about twenty years these shells fall to pieces, the trichinæ die, and no more danger is to be feared.

Trichinæ are usually found in meat, either entirely free of a shell, *i. e.*, before they have had time to encase themselves, or only partially encased. If a man or other animal eats such trichinous meat, the shells are dissolved by the acids of the stomach, the trichinæ are freed from their prison cells, become rejuvenated and fruitful, and multiply faster than a counting-machine can count; and then begins that penetrating and boring into the muscles and tissues which I have previously described, engendering the most terrible suffering and excruciating pain known to man, the trichinosis.

SYMPTOMS OF TRICHINOSIS.

The symptoms of this sickness are not manifested until a week or two after the eating of trichinous meat, for it requires this length of time for the old trichinæ which were in the meat to breed their myriads of young, and it is only these young and enterprising fellows that succeed in penetrating from the stomach into the muscles. The symptoms begin with loss of appetite, nervousness, sleeplessness, and an uneasy, feverish feeling in the stomach; then nausea, headache, vomiting and purging, terrible pains in the stomach; then fever and aching of arms and legs; tongue badly coated and can not be projected out of the mouth without great pain; it is painful to chew; face and feet swollen; entire body swollen; patient can not move a muscle without extreme pain; eye-balls throb and almost burst; pulse 120–140, and respiration 30–40. In fact, the whole system is involved, and the patient soon becomes delirious.

From this it is readily seen how complex and general the symptoms are, and hence the most skillful physician is at first misled as to the character of the disease. This sickness is often mistaken for gastric fever, subtyphus fever, catarrh of the stomach, and other diseases of a similar type. In the year 1858 an epidemic occurred among the soldiers of a certain German garrison and was pronounced at the time to be typhus fever; but after six years a physician had occasion to examine the body of one of the victims, and living trichinæ were found buried in the muscles.

MEDICAL TREATMENT.

It is still an open question how to treat successfully the trichinosis. The treatment is as yet mostly experimental in character, but certain prescriptions are used. If the physician knows what he has to deal with when the patient feels the first symptoms, the stomach-pump and syringe are used to great advantage in getting the trichinæ out of the stomach. If, however, the disease has continued a few days before the physician is able to discover what the matter is, there are no remedies at present known to medical science which can be relied upon. Strong wine and arsenic are given in order to afford the patient strength to endure the long siege. Camphor inwardly and outwardly is cooling to the fever and good for the swelling. Besides these prescriptions nothing is certain.

The certainty of death is directly in proportion to the number of trichinæ in the meat eaten, and inversely to the strength of the patient's constitution. Hogs seldom die of trichinosis, since they can stand the pain until the trichinæ have ceased their boring and curled up to rest from their labors. Thus the hogs live and become the most common source of trichinosis to man. If the patient has not eaten too much trichinous meat and has great strength of constitution, he will likely recover.

Dr. A. Johne, of Dresden, whom I shall refer to later, found 6,130 trichinæ in 20 grams of German hog meat. If a man had eaten these 20 grams (I have seen Germans eat twenty times 20 grams) he would, in about two weeks, have perhaps ten million trichinæ in his system. If a man had eaten 10 cubic inches of the meat previously spoken of, in which sixteen trichinæ were found in two pieces no larger than a pin's head, he would thus have taken into his stomach about forty-five thousand trichinæ, and in two weeks thereafter he would have in his system about eighty-five million trichinæ. Before eating German pork a family man should have his life well insured.

If a person does not die of trichinosis, he recovers only very slowly, and even years afterwards he suffers, but in a less degree, from the same pains in his muscles and throughout his whole body. A man who had the trichinosis at Reichenbach during the epidemic four years ago tells me that it is impossible for those who have never had this disease to conceive how much suffering it brings upon its victims. He still suffers severely and will continue to suffer for years, perhaps for life.

SOURCE OF TRICHINÆ.

I translate a passage from Dr. A. Johne's book "Der Trichinenschauer":

"The most common source of infection for the hog are rats, which, as is well known, infest hogsties and are eaten by the hogs. Rats generally contain trichinæ, especially in places where they have the opportunity to infect themselves with animal excrement; so also in old houses, where 22.1 per cent. (in Berlin even 100 per cent.), and in butcher shops, where 5.3 per cent. of the rats are trichinous."

I go a little further and assert that the same filth which produces trichinæ in rats produces also trichinæ in hogs; and it is not absolutely necessary for hogs to eat rats in order to become trichinous. In Germany hogs are never fed on grain, but only on filth, slops, and refuse matter from butcher shops and slaughter-houses. The cleanest of the filth, if I could use such an expression, is fed to the cows, and hence such slimy and sickly milk in Germany, and hence, also, trichinæ sometimes in beef; the filthiest of the filth is reserved for the hogs.

These epidemics of trichinosis occur in Germany notwithstanding the great number of *trichinenbeschauer*, or trichinæ inspectors. Each city has its own inspectors, who get a small

fee for every slaughtered animal they inspect. Inspection of meat in Germany is not required by any State ordinance, but is entirely a local option affair, and, like local option in general, is very inefficient and does not accomplish the object in view.

A complete mode of examining a hog is to take pieces from five different parts of the animal, to wit, parts of the diaphragm, of the muscles between the ribs, of the muscles of the eyes, of the muscles of the jaw, and of the larynx. Small bits of these five parts are examined with a microscope, and, if no trichinæ are found, the inspector stamps on the hog a seal which reads "Inspected for trichinæ." Please notice the ambiguity of the expression; it does not say that there are no trichinæ in the hog. In order, however, to encourage careful inspection 20 marks, or almost $5, are given to every inspector who discovers trichinæ. It is almost safe to eat meat after it has passed an inspector, but still I am not willing to risk it, for, although it is an easy matter to discover trichinæ after they are several months old and encased in a shell, yet it is extremely difficult to find the little ones only a week old.

The reasons for the refusal of the German Government to allow American pork to enter German territory are said to be two: (1) Because of the great prevalence of trichinæ in the American hog, and (2) because there is no compulsory inspection for trichinæ in the United States. The first reason is practically demonstrated to be untenable by the fact that Americans eat their pork every day, cooked, rare, and raw, and still no epidemics like those in Germany ever occur. There is, no doubt, an isolated case of trichinosis now and then, but I have personal knowledge of only one case, and it was caused by imported Vienna sausage. Hence the second reason also is groundless. Moreover, why could not a German importer of American pork be required to have his meats inspected, just as the butcher is now required to do with his home product? There is a requirement in Plauen and other German cities for the importer of European meats to have his meats inspected, even when said meats were inspected before importation. Why not apply this also to American pork?

It is very remarkable how much pains the learned men of Germany take to teach and inculcate every false impression that may happen to arise in regard to every foreign country in order to make the Fatherland compare more favorably. I give as a sample a passage from the book, previously quoted, by Dr. A. Johne, of Dresden, who, after giving the percentage of trichinous hogs in Germany to be almost nothing (*i. e.*, about four-hundredths of 1 per cent.), proceeds to say: "In America, on the other hand, trichinosis among the hogs seems to be much more common, for, according to a great many examinations by Billings in Boston for the years 1879–'81, 1:25.8, or about 4 per cent. of all slaughtered hogs, were trichinous. According to an average made by Salmon the percentage of trichinous hogs in America is, throughout, 2.7 per cent. Out of a shipment of eighty-eight hogs in 1882, which were imported alive from America and slaughtered at the Dresden slaughtering-house, fourteen (1:6.1=16 per cent.) were trichinous. Examinations of American meats in general show similar figures," etc. Dr. Johne is, as previously stated, the highest authority on this subject in Germany, and all the trichinæ inspectors of Saxony, if not of all Germany, are educated by him; and these young men, hearing such a statement from the lips of their professor and reading the same in his book, gulp it down like a crane would swallow a frog, and it is digested and becomes a part of their very being. Hence it is necessary to contradict such a statement and publish to the world the truth. I make the following abstract criticism of the passage, which, I believe, will reveal its falsity. Billings, in Boston, had a very narrow range of investigation, and hence could not draw any general conclusion; moreover, as I have reason to believe, he mistook the *Ascaris acus* or the *Strongylus* and other pseudo-trichinæ for real trichinæ. Again, how could Salmon make an average for the whole United States when there were no trichinæ inspectors, without whom it is utterly impossible to make such statistics? Then, the eighty-eight hogs were on board the ship almost two weeks, possibly longer, and it required at least two days more to arrive in Dresden, and Dr. Johne does not mention how long the hogs were kept and fed on filth in Dresden before they were slaughtered. These are most important considerations, for the hogs could have all become trichinous on board the ship by eating filth or a rat (every one knows that ships are full of rats), or perhaps even after they arrived in Germany, and thus could have been in the

condition reported. But when Dr. Johne says "examinations of imported American meat in general show similar figures," he must have known it was false. For, if such a statement were true, nobody in the United States except vegetarians and Jews could arrive at middle age in life.

But suppose that Johne's statement were true (and I shall take his smallest figures for America, 2.7 per cent.), and suppose, moreover, that pork in America were inspected, thus preventing numberless epidemics, as is the case in Germany, then the percentage of trichinous hogs in Germany is to the percentage of trichinous hogs in America as the number of epidemics of trichinosis per year in Germany is to the number of epidemics of trichinosis per year in America. But, as I have no figures representing the number of epidemics per year for the whole of Germany, I change the proportion so as to read: The percentage of trichinous hogs in Germany is to that in America as the number of epidemics per year in Saxony is to the number of epidemics per year in each part of the United States as large as Saxony. This put into figures reads as follows: 0.04 per cent. : 2.7 per cent. :: 6 : $x = 405$. But the United States is 604 times larger than Saxony; hence $405 \times 604 = 244{,}620$ epidemics of trichinosis per annum in the United States.

The result of the warfare against American pork has been shown as it relates to the consumption of meat in Germany, and I submit the following, taken from an official report published in this Kingdom, which shows how said warfare is used to nourish and protect the German hog commercially, and which also adds force to my third conclusion at the end of this report:

"The importation of swine into Germany from abroad is significantly less than in the foregoing year. There was imported during the first half of 1887 a less amount by the following figures: 66,169 hogs, 43,722 pigs, altogether 109,891 head. In the foregoing year the importation of swine into Germany was, it is true, unusually large, but still the fact remains in and of itself, as in the case of Austria-Hungary, full of significance. The most important countries whence this importation comes, judging from the boundary entered, are —

Country.	Hogs.		Pigs.	
	1886.	1887.	1886.	1887.
Austria-Hungary	176,138	100,845	55,699	37,608
Russia	23,372	35,844	51	121
Holland	16,345	13,963	49,107	39,533
Hamburg	32,711	29,974	35	43

"The amount from Austria-Hungary for the first half of 1887 is 93,384 head, and these were mostly heavy in weight. Germany, however, maintains also a remarkably large swine export, which for the first quarter of 1887 was 161,561 head (hogs and pigs) and was directed mostly to and via Hamburg."

The facts in the foregoing report clearly prove: (1) The great prevalence of trichinæ in the German hog; (2) the practical non-existence of trichinosis epidemics in America, and, consequently, of trichinæ in American hogs; (3) therefore, it can not be for the sake of the health of the German people that American pork is prohibited, but for mere commercial interests.

TRADE AND AGRICULTURE IN IRELAND.

REPORT BY CONSUL SAVAGE, OF BELFAST.

IMPORTS FROM THE UNITED STATES.

It is impossible to obtain accurate statistics of the importation of goods from the United States into Ireland, as none of the steam-ship lines deliver freight at any Irish port. All kinds of property destined for Ireland is carried to Liverpool or Glasgow, where it is put on board the "cross channel" steamers and brought to Ireland. Government statistics do not designate goods destined for Ireland, but include them with those for England and Scotland.

The trade between the United States and this consular district is increasing slowly year by year. This is apparent from the multiplicity of new articles of American manufacture exposed for sale and sold as American goods. Such, however, are the conservative characteristics of the people of the north of Ireland that they are slow to adopt anything new. Indian meal, as food for man, has not gained a footing in this country. It is coming slowly into use, however, as a food for poultry and pigs. I have heard of its being tried as feed for horses, but even when mixed with bran and cut hay it has generally been condemned. American beef, hams, and bacon are found for sale, but rarely will the vendor acknowledge that it is other than the product of this country. American cheese has nearly conquered prejudice, and in the largest stores in this city is boldly marked as such. Canned fruits are coming into use, and ultimately they will have a large sale. American petroleum and sewing-machines have conquered the market. At retail hardware and house-furnishing goods stores may be found various useful and convenient articles of American make.

In reviewing the trade and commerce for the past year I shall speak first of that pertaining to the whole country, and afterwards more particularly of this consular district.

AGRICULTURE.

Agriculture, which is still the chief industry of Ireland, has, with the exception of the flax crop, shown a distinct improvement during the year. The total area under crops as shown by statistics was, in 1888, 5,141,155 acres, an increase of 75,498 over 1887. In wheat there was 99,426 acres as compared with 67,181 the preceding year, an increase of 32,245 acres, or nearly 50 per cent. In grass the increase has been 87,360 acres, besides a moderate increase in barley, rye, potatoes, mangel and other less important crops. Root crops gave a very fair yield, but the quality, particularly potatoes, was not good. The sowing of flax in Ireland was, in 1887, 130,284 acres; in 1888, 113,586 acres; decrease, 16,698 acres. The early part of the season was very favorable to this crop, but the storms and almost incessant heavy rains during July and the early part of August lodged a great deal of the

crop, injuring the fiber, preventing its ripening, and necessitating its being pulled too green, with the result that as to strength, spinning quality, and yield from the hackle the Irish flax crop of 1888 was one of the most unsatisfactory in years. As a consequence, and owing, also, to bad flax crops in other countries yarns have, during the past few months, increased greatly in price, which increase will, of course, materially enhance the cost of linen goods. The following table shows the sowing of flax in Ireland for the years mentioned at intervals of five years each, from 1860 to 1880, and annually since:

Year.	Acreage.	Year.	Acreage.
1860	128,595	1883	95,935
1865	251,000	1884	89,197
1870	195,000	1885	108,147
1875	101,000	1886	127,890
1880	157,540	1887	130,284
1881	147,145	1888	113,586
1882	113,502		

In live stock, horses show an increase of 7,647, and sheep 248,954, while in horned cattle of all ages the decrease has been 58,163. Pigs are such an important item to the Irish tenant-farmer that I think it well to append the following table, giving the statistics of pigs in Ireland for the last ten years:

Year.	Pigs.	Year.	Pigs.
	Number.		*Number.*
1879	1,072,185	1884	1,306,550
1880	850,269	1885	1,269,122
1881	1,095,830	1886	1,263,133
1882	1,430,128	1887	1,408,485
1883	1,348,364	1888	1,397,600

The business of this consular district during 1888 also shows an improvement over the preceding year, as appears by the following table giving the declared value of the exports from Belfast and the agencies at Ballymena and Lurgan:

Year.	Belfast.	Ballymena.	Lurgan.	Total.
1888	$8,905,510.79	$106,535.50	$666,041.77	$9,678,088.06
1887	8,575,751.56	107,311.54	588,142.69	9,271,205.79
Increase	329,759.23	.....	77,899.08	406,882.27
Decrease	.....	776.04	.....	.....

HOUSES.

During the year 2,011 plans for houses to be erected have been approved by the local board, besides 132 plans for the erection of warehouses, schools, churches, etc. Of course, many of the houses are small, being intended to

accommodate the working population. The increase in valuation during the year is shown by the following table:

Valuation at close of year 1888	$29,554,166.90
Valuation at close of year 1887	29,493,836.90
Increase	60,330.00

CUSTOMS AND EXCISE.

The customs and excise duty paid at Belfast during the year amounted to $8,687,242.68, an increase over 1887 of $534,283.30. This is the largest amount paid by any place in Great Britain, excepting London and Liverpool.

TONNAGE.

The tonnage of ships built at Belfast during the year amounted to 35,527, as against 41,953 during 1887. During January Messrs. Harland & Wolff have launched from their yard a new steamer for the White Star Line, the *Teutonic*, of 10,000 tons burden, and they are also building for the same company a sister ship to the *Teutonic*, to be called the *Majestic*, both intended for the passenger trade between Liverpool and New York. By arrangement with the Government these ships are so built that they can be mounted with guns and turned into armed cruisers should the necessity arise.

The following table gives a synopsis of the shipping arrived at Belfast from foreign ports during the year ended December 31, 1888:

Country.	Vessels.	Country.	Vessels.
British	268	United States	2
Norwegian	62	Russian	2
German	9	Dutch	1
Italian	7	Spanish	1
Danish	4	Total	360
Swedish	4		

BELFAST A CITY.

During the year Belfast has, by Royal charter, received the distinction of being made a city, a distinction all the more marked as it is the first place in the Kingdom to receive this honor which is not the seat of a cathedral.

A large number of the citizens are desirous of holding an exhibition here in 1890, and, for the purpose of furthering the project, a meeting was recently held at which a committee was appointed to canvass the matter, and also to receive and solicit offers of guaranties. There is great doubt, however, as to whether the project will be carried out.

GEORGE W. SAVAGE,
Consul.

UNITED STATES CONSULATE,
Belfast, February 21, 1889.

CANADIAN AND AMERICAN LUMBER INTERESTS.

REPORT BY CONSUL HOTCHKISS, OF OTTAWA.

LUMBER TRADE OF CANADA.

The leading industry of this district, that of sawed pine lumber, still keeps its relative position as the second leading industry of Canada, in this district alone amounting to the sum of $3,000,000 annually. The conditions of prosperity were never more apparent than at present, so far as the ready sales of the lumber are the barometer. The only apparent difficulty the past year has been ocean freightage and the enormous raise in rates, growing out of shortage of freight room, from the sea-ports. This drawback is not local to Montreal and Quebec, but has proved general at all maritime ports. The effect of this difficulty is to leave upon the docks of the manufacturers here an abnormal quantity of lumber—sold, but undelivered. To so great an extent does this condition exist that the spring sawing, it is feared, will be tardy for want of piling room for the new lumber.

Prices throughout the year have been maintained, and on desirable lots a slight advance may be reported, a general tendency to higher prices prevailing. A full stock of logs for the sawing season of 1889 is assured, and the outlook for the coming season is most propitious.

The greatest disturbing element which now agitates the lumbermen of Canada is the United States tariff question of free lumber or any change of rate. The chief disturbing element, and one which is a deep source of grievance to the American lumbermen, is the Canadian "export duty," levied by Canada on the pine logs going from Canada to the United States (the only consumer of logs).

I have given the subject much time and attention, which have been well repaid. The work has been greatly simplified by years of personal experience as a practical lumberman, both in Canada and in the United States. Observing the intense interest manifested by the United States lumbermen in this question, and being fully aware of the extent and nature of the effect of the recent increase in the export duty imposed by Canada, I have seen the necessity for a more perfect understanding of the subject and its bearings upon the pecuniary interests of the United States limit-holders in Canada, who are the chief sufferers. Knowing that more or less pine logs and round timber were imported into Canada from the States—in short, that reciprocity existed to a certain extent in the traffic of logs—I was led to examine the Canadian trade statistics, with a view of ascertaining the volume of this especial trade. My astonishment was indeed great when the results were obtained. These results were immediately communicated to the Department, and that they may now become history I embody the figures in this report. I opine that they will be a revelation to the public, as they surely were to the lumber trade of both countries. If this condition, which is proven to exist in this

traffic, is not a powerful factor in aid of the removal of this unjust export tax, I am quite sure that no character of oral argument can be made.

The following exhibit of imports and exports is taken from Canadian customs returns for the respective years:

Comparative statement of imports and exports of pine logs and round unmanufactured timber between the United States and Canada from 1880 to 1888, inclusive.

EXPORTED FROM THE UNITED STATES TO CANADA.

Year.	Ontario.	Quebec.	Nova Scotia.	New Brunswick.	Manitoba.	Total.
1880	$183,566	$19,257	$7,780	$5,537	$3,814	$219,954
1881	323,755	823	4,515	4,609	10,633	344,335
1882	590,329	911	4,472	7,575	88,260	691,547
1883	409,448	180	8,911	2,143	237,724	658,406
1884	348,907	13,012	9,162	10,206	311,671	692,958
1885	357,049	1,583	4,732	659	240,380	604,403
1886	311,234	35,583	1,704	183	144,492	493,196
1887	239,446	137	4,668	521	90,407	335,179
1888	222,352	19,233	5,022	211	33,052	279,872
Grand total						4,319,850

NOTE. — The total quantity exported from the United States to Canada was 549,599,000 feet.

EXPORTED FROM CANADA TO THE UNITED STATES.

Year.	Quantity.	Value.
	Feet.	
1880	2,075,000	$13,771
1881	2,640,000	20,276
1882	1,313,000	16,001
1883	2,863,000	18,812
1884	974,000	8,012
1885	380,000	2,300
1886	2,869,000	24,452
1887	6,350,000	49,242
1888	468,000	3,875
Total	19,932,000	156,741

RÉSUMÉ.

	Per cent.
Value of logs, United States to Canada, ($4,319,850)	96½
Value of logs, Canada to the United States, ($156,741)	3½

CANADIAN EXPORT TAX ON LOGS.

The efforts being made by the lumbermen of the United States, after the facts and figures as given above had become generally known, were redoubled, the clamor for simple justice from Canada being renewed.

This export tax is one in which the owner of timber limits in Canada desirous of exporting his logs to the United States is the principal party affected thereby. The dealers and consumers are but contingently affected. This export tax was adopted by Canada about twenty years ago, and at the time only as a means of income. The rate of duty was then $1 per 1,000

feet. In 1886 it was advanced to $2, and at that time I had the honor to advise the Department of this increase and of the further intention of the Government to continue the increase until the prohibitive point should be reached, for it was at this period that the prohibitive designs were made the policy of the Government.

In the fall of 1888 it was rumored that certain Americans had intentions and were preparing to cut from 150,000,000 to 200,000,000 feet of logs on their limits during the present winter of 1888–'89. On this rumor reaching the Government an "order in council" issued raising the duty to $3 per thousand. This increase took effect immediately and resulted in putting a stop to all work in the direction of log cutting with a view to exportation. Your consul was then appealed to to use his good offices towards obtaining a retraction of the order. In consultation with the authorities I soon learned that the "order" would not be rescinded; that "every facility would be offered the owners of the timber who were desirous of moving their mills and operations to Canada; but, if $3 per thousand did not work as a preventative to timber going out to the States, an additional advance would be made until the prohibitive point was reached." This leaves Americans with millions of dollars invested in standing timber as dead property, only to be made available by sale or abandonment.

This condition of affairs was never contemplated by the purchasers of the timber limits in their dealings with the Government, and the situation is one most onerous in its effects. I have been informed that "the cost of collection of this export duty exceeded the income," from which it would appear that from an economic point of view considerations of its judiciousness would have weight with its projectors. It may be stated that the only articles of Canadian production covered by this export duty are saw-logs, etc., and shingle-bolts (from logs).

The reason given for the imposition of this tax is "to preserve the timber as raw material for the benefit of the working-men and mills of Canada."

Probably fifty thousand laborers in Canada are dependent upon the lumber industry for their livelihood. The question of the amount of standing pine timber in Canada is a very open one, and one which is little understood even by the lumbermen of Canada or the United States.

PREPARING LUMBER FOR MARKET.

Millions upon millions of sawed lumber are constantly seen moving in some direction from Canada, and this has been going on for fifty years or more. Untold millions of feet of timber, squared in the woods, in true lengths, have for fifty years been floated to Montreal and Quebec for the English markets.

The timber cut for the English market is shipped mainly in the form of square timber, and to an approximate extent in the form of "deal," which is sawed invariably into 3-inch plank. This method of preparing the raw material for that market has become stereotyped, and the demand for only these

is as absolute and exacting as is the American market for the sawed lumber in all its varieties of styles, ready for its varied uses. The timber and deal of the English, however, is intended for remanufacture into all the varieties required by their peculiar uses.

As is well understood, the Americans require sawed lumber of every grade and quality, and the base of supply in the United States and Canada being so convenient, the poorer grades will bear the cost of transportation, so that they are had in abundance, while the English market is subjected to the additional heavy ocean freight, heavy port and other charges, before the timber and deal are sawed into their varied and requisite shapes for use. The character of charges alluded to are the same on a "cull" as on a "clear" stick of timber; hence the necessity for sending to the English market only the product of the choicest of the forest trees. To obtain this timber suitable to the demand therefor the forests are closely scanned, all the best trees are selected, and the remainder, good, bad, and indifferent, are felled and made into the ordinary 12, 13, 14, and 16 feet logs for the saw-mills of this country; and the lumber from this character of logs forms the basis of the supply for the Canadian and American markets.

When sawed and carefully selected and dried every conceivable desire or necessity of the trade demand can be met, except for "clear lumber" (the best quality or grade), which can only be obtained in limited quantities, because the choice trees, as stated, have been previously culled out and converted into stock for the English market. This process of culling out the choicest timber has been prolonged even to the present day.

LUMBER SUPPLY OF THE UNITED STATES AND CANADA.

The opinion which so generally exists of the inexhaustibility of the Canadian forests is erroneous. It has its natural bounds, and a person has not to travel to the North Pole to find its limit. Any person who so desires may look at any map of Canada and find the Ottawa River, the main course of which is east and west; observe the rivers which run south into the Ottawa, and when in the vicinity of their source further observe that, at this point, other rivers also have their source, but all run north to Hudson's Bay and contiguous waters. This point or section is called the water-shed, and from this vicinity, as you go north, you are leaving the pine belt behind you, it no longer being indigenous to the climate and soil. The growth of pine timber likewise has its circumscribed limits both on the east and west. These limits may be placed, approximately, at the seventy-third degree of longitude on the east and at the ninetieth on the west, the distances being to a point about 130 miles north of the St. Lawrence River, and east and west an approximate of ten hundred miles.

The virgin forests of Canada are fast becoming a subject of history. The provincial governments of Ontario and Quebec still have under their control a certain limited extent of scattered acreage, but the major portion of this valuable heritage has been put under lease. The method of disposition is

not by sale but by lease, under fixed regulations, which exist only at the pleasure of the lessor, the conditions of which were fully given the Department in my annual report for 1887.

The question of the quantity of remaining standing pine in Canada is a problem which no man need venture to solve, but it is quite safe to say that the encroachments upon it are of a character which are being seriously observed, and that the timber available for saw-mill lumber stock is, by the character of culling—heretofore described—to which the forests have been subjected, become so reduced in quality that the lumber therefrom is of a grade for which the Canadian manufacturers must find their market in the United States for the major portion of the output. The box business, now immense and constantly enlarging, is a very large source for its consumption, and the liberal thickness (1⅛ inches) which characterized the Canadian style of manufacture will, while this condition prevails, give the Canadian the decided advantage over his American competitor, but which is a condition of necessity in order to command the market.

Were I asked which country—Canada or the United States—would, under existing and probable future conditions of demand, first surrender to the inevitable in an exhaustion of their supply of marketable commercial woods, I should unhesitatingly reply that Canada would first be compelled to face these conditions.

Great as the supply of timber has been and still is in Canada, the conditions of supply are still greater and of far superior quality in the United States. The forests of the United States abound in valuable soft and hard woods, several of which, now not fully appreciated, because of the still ample supply of pine, are now and will be for long years hence utilized for all mechanical purposes, as is the pine of to-day. I allude to the whitewood (yellow poplar) of the Middle States, the white hemlock of New York and Pennsylvania, and the "fatty pine" of the South. The growth of timber in the United States (undoubtedly owing to climatic effects) has been more rapid than in Canada, all varieties of timber being of a much larger growth. The lumber product is certainly double, tree for tree.

The whitewood (yellow poplar) of the South has never been properly appreciated, but as pine decreases in supply and enhances in market value this wood will assert its proper place as the equal of pine for a large percentage of the ordinary demands of trade. It is soft to work, and does not shrink and swell like white pine. It possesses good lasting qualities, and the "run of log" in quality is far superior to any pine lumber produced at the present day. The whitewood of Canada has long since become exhausted. In the soft woods Canada has comparatively only her pine to depend upon, while for long years to come the soft woods in the forests of the United States will continue to be one of her many blessings, when the white pine shall have reached its end. The white hemlock now standing in northern Pennsylvania and New York has helped and will long continue to be a valuable auxiliary toward the prolongation of the pine timber. It is quite equal to pine for the

many special purposes of house-building (fully equal for all carpeted floors, etc.), and for house frames has no equal. The pine forests of the Southern States are utilized to the necessities of that section of the country, and their surplus will for years to come continue to flow northward.

The day is yet far distant when the United States will become dependent upon any foreign supply for her timber or lumber requirements, notwithstanding the present enormous consumption and the apparent denuding of her forests. While as a nation it behooves the people to exercise a consistent degree of frugality, there is no known country on earth whose conditions of independence as regards wealth of forests, at this day or prospectively, bear any comparison to that of the United States. As regards the Canadian forests, in which the people of the United States have a deep interest, the end of their production is more plainly visible than is that of the soft woods of the growth of the States. Many of the homogeneous woods of Canada are already extinct and now may be found on her free list in customs. Canada is dependent upon the United States for her necessities in the use of black walnut, hickory, oak, whitewood, cherry, chestnut, and pitch pine. All of these woods, when not further advanced than being "sawn," are admitted free of duty. The requirements of Canada for black walnut and oak lumber have for many years compelled her people to look to the States for a supply. Her forests once abounded in these woods. The writer well remembers the day when oak and black walnut were utilized as fence-rail material. Many rail fences this day standing in western Ontario attest this fact, and of a prodigality which was the sequence of plenty.

I have entered thus fully upon this subject of the relative supply of the economic commercial woods of Canada and the United States, not in an invidious spirit, but because I deem it a question which should be more generally understood by the American people in their own interests, that their relative position of independence may the more fully be appreciated.

EFFECT OF THE CANADIAN EXPORT TAX.

I think it ungenerous to suppose that had the Government of Canada been cognizant of the true condition of the traffic in logs between the two countries, which conditions are shown in the first table of this report, that the export duty on logs and round timber, etc., as imposed by them, would have had any degree of consideration through the palpable inconsistency of such action. Nor is it reasonable to suppose that the American people are so constituted by nature that, except in ignorance, they would for years contentedly have paid to Canada this export tax while allowing Canada to have, free of taxation, all the logs she desired in return.

The time was when the Americans would have been content with the return to the original export tax of $1, possibly with the continuation of the $2, but under the circumstances of the disproportionate character of the exhibit of the imports and exports of logs, etc., they have concluded that the only satisfactory course to them will be the entire abolition of the export duty, and have, as the only constitutional means left them, petitioned Con-

gress to amend the tariff laws by enacting, as in section 2 of the Baker bill now pending, viz:

That in case any foreign country shall impose an export duty upon logs, shingle-bolts, or other kinds of wood, etc., that such export duty shall be added to the prevailing import duty on the manufactured product of such kinds of logs, bolts, or woods when imported from such country imposing such export duty.

I have to report sales by the Government during the year 1888 of pine leases to the extent of nearly $2,000,000; of this sum nearly $500,000 was by American purchasers direct and in behalf of American interests. No sales of timber limits have been made to Americans since the order in council issued advancing the export duty to $3 per thousand.

DECISION OF THE EXCHEQUER COURT OF CANADA.

The recent decision rendered against the Canadian Government in the exchequer court of Canada on the question of duty on oak lumber rightfully has a place in this report. The Canadian tariff act, free list, reads as follows: "Lumber and timber, plank and boards, sawn, of oak, etc., not shaped, planed, or otherwise manufactured," An ordinary tradesman would, on reading the above-quoted section of the tariff, always decide that oak lumber, when "sawn" only, was free of duty when imported into Canada. For many years the customs department has assessed oak lumber at 20 per cent. duty on the ground of its being shaped "if sawed to any size or length which approximated the particular requirements for which it was desired." Many thousands of dollars have thus been paid into the Dominion treasury simply because it was demanded, which, had the same been paid under protest, would, under the late decision, now be refunded.

Conceiving that the language of the act did not reasonably warrant the conclusions set forth by the customs department, I took measures to have a few large shipments pay the duty under protest, and caused an action to be laid against the Government for the recovery of the duties thus paid. The case duly reached a hearing within the year, the court deciding that the lumber when sawed only, and not further advanced, was not subject to duty, inasmuch as sawing was allowed, and no restrictions being imposed as to how it should be sawed; the will of the sawyer controlled the style of sawing as to size and length. The judge also incidentally stated that "such strained and illiberal constructions of the language of the tariff as had characterized the decisions of the customs officers in this case were contrary to the spirit of the customs act."

This decision will now permit oak lumber to come into Canada free unless some change in the tariff is adopted at the session of the Parliament now sitting. For, as stated heretofore, the oak lumber used in Canada must be almost exclusively drawn from the United States.

THOMAS W. HOTCHKISS,

UNITED STATES CONSULATE, *Consul.*

Ottawa, February 20, 1889.

No. 107, August——3.

COMMERCE OF CAPE COLONY.

REPORT BY CONSUL HOLLIS, OF CAPE TOWN.

PROSPERITY OF CAPE COLONY.

A comparison of the statistical returns of exports and imports reveals the fact that the trade of the colony shows a gratifying increase for the year 1888 over the preceding year. It is to be presumed that the increased prosperity of Cape Colony and Natal has been greatly stimulated by the discovery and opening up of the rich gold fields of the Transvaal, with its accompanying large influx of foreign population. As the Transvaallians put it: "Kimberley, with its magnificent diamond mines, saved Cape Town; and the Transvaal, with its fabulous gold mines, will save the colony." It is perfectly true, however, that the rapid advancement of this colony and Natal in wealth and commercial prosperity and in the development of various manufacturing industries hinges entirely on the prosperity of the mining interests of the Transvaal. Any hindrance or check to that would react most fatally on colonial prosperity.

All foreign goods for the Transvaal must, for the present and until the completion of the railway from Delagoa Bay, which seems to be as far off as ever, pass through either the colonial or Natallian ports; and the profits of handling and carrying, commissions, etc., will represent no inconsiderable amount. In general terms, it might be said that most of the heavy goods intended for the Transvaal or the Free State go by way of Natal, while Cape Town absorbs for its share of the traffic passengers and all light and high cost goods.

The railway, customs, post-office, and telegraph services show largely augmented earnings, the net increase for the past eight months being over $1,000,000. For February alone of this year the increase was $200,000 over the corresponding month of last year. Every department of the Government shows returns largely in excess of previous estimates. With a material reduction of the postal rates* the returns for the first month showed an increase in the revenue of $3,700 over the same month of the previous year. Both Natal and the Transvaal have a surplus in the treasury of about $2,000,000, and the former has wisely decided to expend the whole of it in perfecting their harbor, extending railways to newly opened coal-fields, and the general improvement of public works.

While the banks have declared 10 and 12 per cent. dividends they have largely strengthened their reserves. Commercially, therefore, the colony may be considered to be in a prosperous condition.

The agriculturists and stock raisers have met with fair returns. Under a better system and more scientific treatment both branches would have been greatly benefited. The vintners have realized better prices for their goods,

*Now 12 cents to the United States, 8 cents to England, 2 cents in the colony, and 4 cents outside of the colony in South Africa for each half ounce.

in some lines 50 per cent. advance over previous years. The price of wool for the last clip was at least 10 per cent. better than the previous year. With better care in selection, more careful attention to the prevention of scab, and more careful sorting of the wool before baling for the market still better results would be attained.

With the increased capacity of the colony to absorb larger importations of foreign goods, consequent upon the increased prosperity of the farming population and the great influx of immigrants into the Transvaal and the country to the north, there is no question that trade will show a much larger increase for the current year.

It must be also borne in mind that hundreds of farms are being sold for mining purposes by the Boer farmers at an average price of £100,000, which three years ago would not have brought as many cents. We can conjecture what effect this letting loose of such vast sums of money will have upon trade. These farmers have always lived in the most primitive manner, contenting themselves with the barest necessaries of life. They can not escape being infected with the civilization brought right to their doors, and the influence of Johannesburg, with its urban culture and refinement, will be felt throughout the country. And this will mean better houses, more of the conveniences of life, and hundreds of articles, now almost unknown, will soon become necessities. Modern agricultural implements would work wonders in this country, and with the introduction of railways and the ordinary comforts this country would be a paradise, and would attract a large population. An English member of Parliament, traveling through the country, cabled home: "Thousands of carpenters and bricklayers wanted at Johannesburg."

As soon as the present harvesting season is over the Government intends to put questions to the farmers, through proper officials who will see to their collection, concerning the yield of the various crops and vintage, number of horses, cattle, and sheep, extent of land under cultivation, and amount of machinery in use on farms. This will be the third general enumeration that has been made. It may also be noted that this is the year for the decennial census of the Transvaal and the Orange Free State, and it is hoped that Cape Colony will do the same, to the end that a reasonably perfect census of South Africa can be published instead of disjointed sections.

TRADE BETWEEN THE COLONY AND THE UNITED STATES.

Such being the condition of the field here our merchants should be on the alert to secure a fair share of this trade. I met a merchant this forenoon who stopped to thank me for putting him in business connection with an American house. He said: "What is the use of my importing American goods through London?" There lies the point of the whole matter. What is urgently needed to promote South African trade is a steam-ship line, either direct or to Australia or New Zealand, stopping here on call. The times call for it, and it must come in the near future. The two steam-ship lines carrying the mails weekly from London to the Cape have added extra inter-

mediate steamers to accommodate the increased traffic. The Australian and New Zealand lines also now stop at the Cape with passengers and freight.

INCREASED COST OF LIVING.

The effect of this increased prosperity is far-reaching, and is felt by all classes. Rents are high, prices of all commodities well up, labor is in good demand and well paid. So great a call has been made by the Transvaal for clerks, etc., that the public service has suffered in efficiency, and at the opening of Parliament to-day (May 20) it was stated that a bill would be introduced increasing the salaries of the civil service. Bills will also be introduced for the construction of several lines of railways, and it is reasonably certain that a customs union will be established between the various countries with, possibly, lower rates of duties.

IMPORTS AND EXPORTS.

Imports into Cape Colony and Cape Town.

CAPE COLONY.

[Taken from published official returns.*]

Articles.	Quantity for year ended December 31—		Declared value for year ended December 31—	
	1887.	1888.	1887.	1888.
Agricultural implements			£25,118	£33,982
Ale and beer.....gallons...	557,830	517,654	80,135	75,145
Apothecary-ware			59,595	76,764
Apparel and slops			342,289	335,266
Bags (all sorts)			56,057	89,322
Beads			2,061	2,613
Books (printed)			52,064	52,134
Brush-ware			9,063	9,542
Butter.....pounds...	427,685	399,773	24,297	22,225
Cabinet-ware and upholstery			69,856	94,900
Candles.....pounds...	2,123,396	2,139,762	42,237	40,175
Carriages, carts, and other wheeled vehicles			5,754	10,186
Cement			7,512	8,269
Cheese.....pounds...	755,702	809,511	21,565	24,325
Chicory.....do.....	936,045	558,908	6,864	4,290
Clocks and watches			5,003	6,446
Coals, coke, and patent fuel..... tons...	136,547	154,800	99,508	104,253
Coffee.....pounds...	5,689,021	7,643,252	171,694	217,531
Confectionery, cocoa, and chocolate.....do.....	1,068,803	1,096,941	29,407	32,576
Cordage			9,503	13,115
Corn, grain, and meal:				
Barley.....pounds...	2,426	2,930	15	18
Beans and peas.....do.....	12,304	3,400	44	17
Flour.....do.....	201,000	2,441,265	1,193	9,802
Maize.....do.....	453,432	28,600	982	54
Oats.....do.....	43,742	12,826	258	71
Wheat.....do.....	19,558,701	8,288,156	72,581	26,907
Cotton manufactures			532,363	543,057
Dynamite and blast composition, etc.....pounds...	1,912,988	2,476,546	130,477	167,874
Earthen-ware and crockery			30,228	35,502
Gunpowder (including powder in cartridges).....pounds...	79,991	34,356	3,370	1,003

*1 pound sterling = $4.86,6½.

Imports into Cape Colony and Cape Town—Continued.

CAPE COLONY—Continued.

Articles.	Quantity for year ended December 31—		Declared value for year ended December 31—	
	1887.	1888.	1887.	1888.
Guns.....number...	773	2,949	£5,667	£7,658
Gun-barrels.....do.....	8	17	20	47
Haberdashery and millinery.....	.....	.....	667,707	716,983
Hardware, cutlery, and iron-mongery.....	.....	.....	235,334	257,124
Hats (all sorts).....	.....	.....	53,274	49,046
Iron:				
Bar, bolt, and rod.....	.....	.....	12,282	17,155
Sheet.....	.....	.....	57,735	74,903
Jewelry.....	.....	.....	18,862	22,650
Lard.....pounds...	87,059	46,832	1,828	1,182
Lead (bar, pipe, sheet, and shot).....	.....	.....	3,717	4,398
Leather and leather manufactures (including boots).....	.....	.....	275,948	300,367
Linens and linen manufactures.....	.....	.....	35,593	38,629
Machinery.....	.....	.....	190,355	221,973
Matches.....	.....	.....	1,931	968
Meats, salted or cured (not hermetically sealed)..pounds...	573,250	625,755	19,032	20,076
Musical instruments.....	.....	.....	14,047	20,151
Oil, mineral.....gallons...	1,204,414	737,228	35,681	23,847
Oil-man stores (provisions not otherwise described).....	.....	.....	140,988	162,110
Paints and colors (including turpentine and varnish).....	.....	.....	18,312	20,494
Plated-ware.....	.....	.....	9,784	10,439
Rice.....pounds...	7,086,539	9,928,992	26,096	31,394
Saddlery and harness.....	.....	.....	38,233	51,699
Silk manufactures.....	.....	.....	3,101	5,556
Soap (common brown, etc.).....pounds...	6,001,199	5,670,183	43,036	40,114
Spices (exclusive of pimento and turmeric).....do.....	241,144	226,552	8,418	7,756
Spirits (all sorts).....gallons...	156,598	185,735	74,800	88,777
Stationery.....	.....	.....	83,680	98,635
Sugar:				
Not refined.....pounds...	23,524,425	29,714,250	161,779	215,072
Refined or candy.....do.....	2,618,251	1,691,517	21,060	16,060
Molasses.....do.....	7,792	836	27	6
Tea.....do.....	1,500,593	1,576,147	44,177	43,245
Tin-ware.....	.....	.....	4,390	4,846
Tobacco:				
Unmanufactured.....pounds...	111,541	144,726	5,032	7,670
Manufactured.....do.....	146,711	148,977	8,628	9,347
Cigarettes.....do.....	26,357	46,443	8,384	15,132
Snuff.....do.....	8	26	2	3
Cigars.....do.....	70,430	103,645	18,325	27,429
Pipes.....	.....	.....	11,514	10,263
Toys.....	.....	.....	13,390	13,752
Wine.....gallons...	29,927	40,056	26,696	39,008
Wood, unmanufactured.....cubic feet...	1,167,494	957,780	47,309	48,713
Woolen manufactures.....	.....	.....	164,206	216,371
Total value of above articles.....	.....	.....	4,501,473	4,998,412
Total value of other articles.....	.....	.....	405,103	460,362
Total value of merchandise.....	.....	.....	4,906,576	5,458,774
Total value of Government articles (colonial).....	.....	.....	118,969	215,019
Total value of Government articles (imperial).....	.....	.....	10,590	4,544
Grand total value of articles.....	.....	.....	5,036,135	5,678,337

Imports into Cape Colony and Cape Town—Continued.

CAPE TOWN.

Articles.	Quantity for year ended December 31—		Declared value for year ended December 31—	
	1887.	1888.	1887.	1888.
Agricultural implements			£7,740	£7,482
Ale and beer.....gallons...	66,091	70,855	11,117	11,093
Apothecary-ware			30,118	39,240
Apparel and slops			105,814	121,721
Bags (all sorts)			10,482	18,401
Beads			114	180
Books (printed)			36,507	36,519
Brush-ware			2,214	2,282
Butter.....pounds...	416,049	386,147	23,663	21,478
Cabinet-ware and upholstery			30,994	35,449
Candles.....pounds...	438,005	376,223	8,724	7,128
Carriages, carts, and other wheeled vehicles			1,479	4,198
Cement			3,007	4,687
Cheese.....pounds...	296,768	354,265	8,910	10,991
Chicory.....do.....	483,704	103,806	3,533	800
Clocks and watches			3,194	3,637
Coals, coke, and patent fuel.....tons...	109,465	108,491	87,498	82,331
Coffee.....pounds...	1,266,512	3,803,061	41,550	105,777
Confectionery, cocoa, and chocolate.....do.....	300,065	333,472	8,846	10,279
Cordage			2,633	3,889
Corn, grain, and meal:				
Barley.....pounds...	1,900	2,482	12	16
Beans and peas.....do.....	6,300	2,400	22	12
Flour.....do.....	54,262	4,010	[illegible]	25
Maize.....do.....	11,725	23,800	17	37
Oats.....do.....		950		5
Wheat.....do.....	10,994,889	2,709,639	42,878	8,402
Cotton manufactures			161,527	185,307
Dynamite and blasting composition, etc.....pounds...	11,235	65,000	843	5,041
Earthen-ware and crockery			9,986	12,268
Gunpowder (including powder in cartridges)....pounds...	19,709	8,816	723	426
Guns.....number...	276	2,422	2,559	4,750
Gun-barrels.....do.....	2	4	6	10
Haberdashery and millinery			311,589	300,455
Hardware, cutlery, and iron-mongery			66,718	78,426
Hats (all sorts)			18,440	19,230
Iron:				
Bar, bolt, and rod			4,476	7,053
Sheet			9,116	12,211
Jewelry			11,492	10,652
Lard.....pounds...	69,558	33,067	1,430	860
Lead (bar, pipe, sheet, and shot)			1,492	2,397
Leather and leather manufactures (including boots)			97,348	108,296
Linens and linen manufactures			10,217	12,862
Machinery			29,482	22,336
Matches			407	93
Meats, salted or cured (not hermetically sealed)..pounds...	235,923	346,571	7,549	10,448
Musical instruments			5,498	8,746
Oil, mineral.....gallons...	491,739	258,060	12,960	8,406
Oil-man stores (provisions not otherwise described)			43,265	49,623
Paints and colors (including turpentine and varnish)			5,701	7,667
Plated-ware			5,402	5,056
Rice.....pounds...	4,792,421	5,305,164	17,645	18,001
Saddlery and harness			3,467	5,791
Silk manufactures			1,335	2,931

Imports into Cape Colony and Cape Town — Continued.

CAPE TOWN—Continued.

Articles.	Quantity for year ended December 31—		Declared value for year ended December 31—	
	1887.	1888.	1887.	1888.
Soap (common brown, etc.)....pounds...	2,189,705	1,767,938	£16,475	£12,940
Spices (exclusive of pimento and turmeric)....do....	100,649	87,376	3,170	2,639
Spirits (all sorts)....gallons...	44,389	39,828	19,134	18,199
Stationery	.....	.....	37,734	45,132
Sugar:				
Not refined....pounds...	7,126,302	10,926,382	50,209	79,801
Refined or candy....do....	1,188,832	831,354	9,882	7,424
Molasses....do....	.....	100	.....	1
Tea....do....	404,353	448,396	10,799	11,117
Tin-ware	.....	.....	1,663	2,225
Tobacco:				
Unmanufactured....pounds...	74,909	105,682	3,016	5,699
Manufactured....do....	102,319	84,652	5,907	4,944
Cigarettes....do....	10,849	18,031	3,690	6,198
Snuff....do....	8	.....	2	.....
Cigars....do....	24,024	44,724	7,013	11,912
Pipes	.....	.....	3,181	2,899
Toys	.....	.....	5,266	4,921
Wine....gallons...	13,309	14,438	9,898	12,418
Wood, unmanufactured....cubic feet...	358,421	232,866	14,399	15,159
Woolen manufactures	.....	.....	44,332	54,024
Total value of above articles	.....	.....	1,557,761	1,733,053
Total value of other articles	.....	.....	138,254	167,511
Total value of merchandise	.....	.....	1,696,015	1,900,564
Total value of Government articles (colonial)	.....	.....	73,229	122,122
Total value of Government articles (imperial)	.....	.....	10,161	3,268
Grand total value of articles	.....	.....	1,779,405	2,025,954

Exports from Cape Town and Cape Colony.

CAPE TOWN.

Articles.	Quantity for year ended December 31—		Declared value for year ended December 31—	
	1887.	1888.	1887.	1888.
Aloes....pounds...	26,002	3,834	£163	£23
Argol....do....	205,649	98,085	6,337	2,889
Copper ore....tons....	.....	4	.....	30
Corn, grain, and meal:				
Barley....pounds...	52,050	28,150	116	75
Beans and peas....do....	39,940	9,443	217	51
Bran....do....	74,500	45,150	170	95
Flour....do....	27,500	54,330	203	285
Maize....do....	254,539	42,290	372	117
Oats....do....	673,666	1,237,965	1,688	3,330
Wheat....do....	3,400	4,200	16	20
Feathers (ostrich)....do....	86,705	108,074	110,351	129,220
Fish (cured)....do....	3,734,659	5,002,121	19,745	24,609
Fruit (dried)....do....	69,316	71,839	712	750
Gold (bar, dust, and nuggets)....ounces...	22,458	144,244	80,159	488,295

Exports from Cape Town and Cape Colony—Continued.

CAPE TOWN—Continued.

Articles.	Quantity for year ended December 31—		Declared value for year ended December 31—	
	1887.	1888.	1887.	1888.
Hair (Angora)....pounds...	58,680	63,979	£2,208	£1,747
Hides (ox and cow)....number...	4,839	692	4,350	630
Hides (ox and cow)....pounds...	.....	37,478	.....	.....
Horns (ox and cow)....number...	42,128	63,134	897	1,099
Horses....do.....	38	5	420	130
Ivory....pounds...	6,142	1,330	1,971	478
Skins:				
Goat....number...	190,771	252,515	25,028	31,776
Goat....pounds...	.....	827,821	.....	.....
Sheep....number...	581,493	696,166	51,703	60,504
Sheep....pounds...	.....	3,218,122	.....	.....
Spirits (brandy)....gallons...	10,255	14,507	2,149	2,533
Wine:				
Constantia....do.....	5,821	4,129	1,729	1,095
Ordinary....do.....	93,733	101,096	16,820	17,876
Wool (sheep's):				
Fleece washed....bales.....	.....	3,733	.....	.....
Fleece washed....pounds...	915,529	993,059	37,314	44,316
Scoured....bales.....	.....	10,347	.....	.....
Scoured....pounds...	2,030,342	1,790,358	114,987	98,085
Grease....bales.....	.....	10,129	.....	.....
Grease....pounds...	1,623,796	4,399,644	44,107	108,052
Total value of above articles	.....	.....	523,932	1,018,110
Total value of other articles	.....	.....	36,242	29,870
Grand total	.....	.....	560,174	1,047,980

CAPE COLONY.

Aloes....pounds...	452,367	657,857	2,728	3,103
Argol....do.....	205,649	98,770	6,337	2,898
Copper ore....tons...	28,264	40,023	577,053	856,803
Corn, grain, and meal:				
Barley....pounds...	78,050	28,150	163	75
Beans and peas....do.....	268,886	128,013	722	359
Bran....do.....	432,755	453,650	903	712
Flour....do.....	75,704	58,530	496	301
Maize....do.....	3,499,143	2,975,509	3,778	2,884
Oats....do.....	773,033	1,237,965	2,029	3,330
Wheat....do.....	5,447,315	6,567,406	10,165	11,938
Feathers (ostrich)....do.....	268,832	259,967	365,587	347,792
Fish (cured)....do.....	3,783,379	5,058,121	19,917	24,859
Fruit (dried)....do.....	72,258	75,466	748	789
Gold (bar, dust, and nuggets)....ounces...	25,698	151,770	92,936	517,821
Hair (Angora)....pounds...	7,153,730	9,598,768	268,446	305,362
Hides (ox and cow)....number...	189,840	160,208	96,756	66,652
Hides (ox and cow)....pounds...	.....	3,965,262	.....	.....
Horns (ox and cow)....number...	286,742	290,845	4,890	5,175
Horses....do.....	192	13	1,635	430
Ivory....pounds...	13,492	6,589	4,774	2,089
Precious stones (diamonds)....carats...	3,598,930	3,841,937	4,242,470	4,022,379
Skins:				
Goat....number...	1,050,312	1,340,685	99,923	109,068
Goat....pounds...	.....	4,950,519	.....	.....
Sheep....number...	2,289,091	2,654,273	169,981	198,107
Sheep....pounds...	.....	12,096,148	.....	.....

Exports from Cape Town and Cape Colony—Continued.

CAPE COLONY—Continued.

Articles.		Quantity for year ended December 31—		Declared value for year ended December 31—	
		1887.	1888.	1887.	1888.
Spirits (brandy)	gallons	10,373	16,647	£2,173	£2,833
Wine:					
Constantia	do	5,841	4,141	1,738	1,099
Ordinary	do	94,982	102,839	17,190	18,378
Wool (sheep's):					
Fleece washed	bales	.....	18,818	.....	.....
	pounds	4,737,543	5,137,735	167,584	185,093
Scoured	bales	.....	106,864	.....	.....
	pounds	18,405,413	20,352,819	1,007,507	1,058,074
Grease	bales	.....	107,538	.....	.....
	pounds	21,615,339	40,863,145	499,840	938,343
Total value of above articles		.....	.....	7,668,469	8,686,746
Total value of other articles		.....	.....	50,916	45,855
Grand total		.....	.....	7,719,385	8,732,601

Though the shipment of gold shows such a gratifying increase, the output for the current year will be much larger.

SHIPPING.

The number and tonnage of steamers and sailing vessels clearing outwards from the various ports of the colony for 1888, as compared with the year ending December 31, 1887, were as follows:

SEA-GOING

Flag.	Steamers.		Sailing vessels.	
	No.	Tonnage.	No.	Tonnage.
British.				
1887	237	614,936	169	101,328
1888	295	798,416	167	106,369
Foreign.				
1887	3	5,023	192	96,775
1888	3	4,383	182	104,398

COASTWISE.

British.				
1887	1,019	1,853,538	177	24,029
1888	1,154	1,975,487	173	30,238

The number and tonnage of steamers and sailing vessels entering inwards in the various ports of the Colony for 1888, as compared with the year ending December 31, 1887, were as follows:

SEA-GOING.

Flag.	Steamers.		Sailing vessels.	
	No.	Tonnage.	No.	Tonnage
British.				
1887	251	636,328	189	111,169
1888	309	830,077	172	107,527
Foreign.				
1887	3	5,023	186	95,498
1888	3	4,383	218	125,124

COASTWISE.

British.				
1887	1,008	1,840,553	38	12,704
1888	1,145	1,950,846	17	7,000

The above compilation gives a total number of 1,457 steamers and 581 sailing vessels in 1888, against 1,262 steamers and 583 sailing vessels in 1887.

TRADE WITH THE UNITED STATES.

Imports at Cape Town from the United States, 1888.

Articles.	Value.	Articles.	Value.
Ale and beer	£32	Meats (salted or cured)	£581
Antifriction grease	119	Oils:	
Axles, etc., for carts, etc	17	Mineral	8,343
Blacking	56	Other than burning	2,798
Books:		Provisions (oil-man stores)	1,530
Printed	48	Resin	90
Foreign reprints	29	Ship-chandlers' stores	39
Brush-ware	231	Soap	228
Butter	8	Sugar:	
Carriages, carts, etc	288	Refined or candy	1,209
Cartridges and gunpowder therein	10	Not refined	34
Clocks and watches	63	Tobacco:	
Cordage	447	Not manufactured (2,307 pounds)	121
Corn, grain, and meal flour	6	Manufactured and cigarettes	1,913
Cottons (piece goods)	69	Tools	171
Drugs and chemicals	857	Turpentine (4,240 gallons)	485
Furniture and cabinet-ware	369	Varnish (25 gallons)	6
Glass (plate and manufactured)	128	Wood:	
Hardware and cutlery	1,988	Not manufactured	2,589
Implements (agricultural, etc.)	383	Staves	6,083
India-rubber goods	138	Planed or grooved	1,471
Instruments (musical)	197	Manufactured	839
Lard	484	Oars	191
Leather and manufactures	473 146	All other goods	135
Linen (piece goods)	1,053	Total	37,268
Machinery (agricultural, mining, etc.)	1,473		

Exports from Cape Town to the United States, 1888.

Articles.	Quantity.	Value.
Argol ..... pounds...	9,110	£225
Buchu leaves ..... do.....	82,559	620
Feathers (ostrich) ..... do.....	29,120	38,392
Flowers (everlasting)	.....	380
Iron (old rails) ..... tons...	219	440
Skins (goat) ..... number...	350	56
Stone (building and rough) ..... tons...	1,020	147
Wool (grease) ..... pounds...	1,883,586	49,589
All other goods	.....	10
Total	.....	89,859

Navigation between Cape Town and the United States.

Flag.	Entered from the United States.	Cleared for the United States.
	Number.	*Number.*
American	3	.....
Austrian	.....	3
British	3	5
German	.....	3
Italian	2	28
Norwegian	1	5
Russian	.....	1
Swedish	1	1
Total	10	46

As I close this report the newspapers announce the formal opening of the woolen factory at Graham's Town by the mayor, at which was shown every operation, from teazing of the raw wool to the leveling of the nap of the finished cloth. Blankets and flannels will shortly be manufactured.

GEO. F. HOLLIS,
Consul.

UNITED STATES CONSULATE,
Cape Town, May 22, 1889.

THE COTTON CROP OF EGYPT.

REPORT BY CONSUL-GENERAL CARDWELL, OF CAIRO.

To state definitely the condition of the growing cotton crop of Egypt is out of the question. At intervals the governors of the provinces report agricultural conditions to the minister of the interior, but the reports are generally tardy, while they are meager and very often most inaccurate. Therefore, to report otherwise than in a general sense upon the growing crop is impossible, for the commercial relations of different communities are of a nature adding but little in the line of information to what may be learned at the ministry of the interior.

The area planted in cotton in 1887 was 865,526 feddans*; that of 1888 was 1,021,250. It is estimated that from 5 to 10 per cent. more land is now being cultivated in cotton than in 1888.

Cotton is the only crop at this time being cultivated. It belongs to the season "safeh," but is harvested in the season "nileh," when the Indian corn and the "berseem" (*Alexandrine trifolium*) and wheat are sown, when, in Upper Egypt, the "dourah" is planted. Cotton is planted in the latter part of March and early in April, and, therefore, in its stages of growth keeps about even pace with the crop in the Gulf States of the United States. Its growth is wholly dependent upon artificial irrigation, being planted at the beginning of safeh, when the Nile is low, while it matures before the river attains its greatest flood.

All vegetation in Egypt is due to the waters of the Nile. Were these diverted from their course—a problem which some contend could be worked out by the enemies of Egypt now hanging upon its southern borders—the valley and the delta of the great river would become as barren wastes as the most elevated deserts of Africa. It may, consequently, be well understood that a generous flood has its influence in greater production, while inadequate waters lead, in the ratio of supply, to lesser returns from agriculture. In 1888 there was a very low Nile, and the crop of 1888–'89, when the accounts are closed at the end of the current commercial year, will show a yield of cotton equal to about three-fourths of that of 1887–'88, which was generously fed with abundant and rich waters. The crop of the present year (commercial) makes it evident that the crop yield of 1888 was not more than 340,000 bales, when the average of the last eight or ten years has been, in round numbers, 440,000 bales.

But it is calculated that the scarcity of Nile water in 1889 consequent upon the insufficient flood of 1888 will not seriously affect the growing crop. Taxation in Egypt is consequent upon, and is absolutely dependent upon, the water supply for agriculture. Lands lying "shakari" (unsupplied with Nile water) are not taxed, and, in consequence, the irrigation department of the Egyptian Government has been very active and efficient in making what water there is do the most good. Owing to the elevation of the water-level of the river, effected by means of the barrage, the lands lying between the Rosetta and Damietta branches of the Nile have been kept well supplied with water, and the cotton dependent upon distribution from these sources is in very fine condition. Such is the case, also, eastward of the Damietta channel, as well as to the westward of the Rosetta. South of the delta, in the valley of the Nile, the cultivation of cotton has, within the last few years, been largely increased. There the means of artificial water distribution are not so good as in Lower Egypt, and hence agriculture has not been fully supplied with the great necessary nutriment, while further south than where cotton is produced there has been most insufficient supply. Special energy, however, has been exercised in feeding the growing cotton crop, and the in-

* 1 feddan = 1$\frac{1}{39}$ acre.

dications are that the yield is to be fairly abundant. It is estimated that the area in cotton is greater than in 1888, and, if so, the crop of 1889 may even exceed, in spite of the scarcity of water in some places, 400,000 bales.

Cotton worms have made their appearance, but have as yet committed no serious damage. The weather being at this time excessively hot, reproduction of this pestiferous destroyer may be delayed until the crop has attained sufficient age to be insured.

JOHN CARDWELL,
Agent and Consul-General.

UNITED STATES CONSULATE-GENERAL,
Cairo, July 8, 1889.

THE COLONY OF MOSSAMEDES.

REPORT BY CONSUL NEWTON, OF ST. PAUL DE LOANDA.

GEOGRAPHICAL SITUATION.

The district of Mossamedes is situated between 13° 50′ south Cape St. Martha and 17° 25′ south the mouth of the Quenene River. It is divided into six conselhos, or divisions, named respectively Capamgombi, Humpato, Gambos, Humbe, Huilla, and Mossamedes, and two military commands. The original demarkation was as far south as Cape Frio, but lately, owing to some convention between Portugal and Germany, the coast line south of the Quenene River has been handed over to the Germans.

THE TOWN.

The principal town is Mossamedes, situated in Little Fish Bay. The town is built on a sandy, flat beach, behind which nothing but sand can be seen for miles. The palace, government buildings, and church lie on a hill to the south. There are no proper accommodations for visitors, there being only one small hotel for single men. The charge for board and lodging is 4*s.* 6*d.* per day, but it is very dirty, and the food is not good. What is required is a good hotel and sanitarium combined, where persons coming from Loanda and the north can be accommodated during the unhealthy season. There is no better place on the coast for such an establishment, and many people would take advantage of it as a means of restoration to health.

A small hospital exists, which is used principally for the poorer classes, but a new one is being built with better accommodations. Two good doctors are established in the place.

Population.—It is difficult to get any exact statistics of the population, except in the conselho or division of Mossamedes, and in 1886–'87 the following was the estimate: Whites, 560; mulattoes, 95; blacks, 4,373. In the other conselhos the number of whites was estimated at 1,143, but it is impossible to give any idea of the number of the natives.

THE BAY.

The bay is formed by Point Giraul on the north, where a good light-house exists, the light being visible at a distance of 15 miles in clear weather, and on the south by Point Nownha. The anchorage is good; vessels of any tonnage and in any number can lie in the bay. A good pier exists near the custom-house, where goods can be loaded and discharged at any state of the tide, and is connected with the custom-house by a small tram-way.

TELEGRAPHS.

A cable has just been laid between the Cape of Good Hope and Mossamedes, touching at Port Nolluth, and continued from Mossamedes to Loanda. This undertaking has just been completed by the cable ships *Silvertown* and *Scotia*. The company is called the Eastern and South African, with offices at Winchester House, Broad street, London. The telegraph circuit of Africa is now complete, and it is expected that a large number of telegrams will now be sent via the west coast, as being shorter and more expeditious than the old route to the Cape via the Red Sea and Zanzibar. The staff consists of one superintendent and eight clerks. The tariff is as follows:

	Reis per word.		*s.*	*d.*
Mossamedes to Cape Town	710	=	3	2
Simons Bay	710	=	3	2
London	2,475	=	11	0
Lisbon	2,455	=	10	11
Loanda	500	=	2	3

IMPORTS AND EXPORTS.

The commerce of Mossamedes consists principally of the exchange of cattle, dried and salted fish, dried beef, and agricultural products for goods and provisions that come from Europe. The value of the imports during the year 1877 amounted to 126,976,265 reis, equal to $138,017.67; the exports were 78,846,607 reis, equal to $85,702.83. The imports consist of different qualities of cotton goods, rice, sugar, sweet-oil, liquors, ale, gums, flour, soap, butter, candles, etc. The exports are fish-oil, fish, hides, bullocks, cotton, and orchilla, and, also, in smaller quantities, rubber, coffee, wax, rum, beans, and Indian corn. There is little native trade, and, owing to the difficulty of transport to the interior, there is but small temptation for more houses to establish here. Cotton and orchilla are the principal exports, and come nearly all from the plantations, very little being bought from the natives. The principal industry in the district is the drying and salting of fish for export to the different ports of the colony, there being over four hundred natives employed in this work and about one hundred boats of different sizes. The quantity exported amounts to about 2,000,000 pounds per annum.

MANUFACTORIES.

There are several small manufactories of lime, tiles, and bricks, and two small cotton goods factories. These latter produced in 1886, 4,000 cotton blankets, 200 woolen blankets, 2,400 native caps (*barretes*), 600 undershirts,

360 pieces stripes, and 150 pieces of different kinds of plain cotton goods, the approximate value being about £2,000. All these goods are consumed in the province. This industry is not being developed, owing to want of capital. The quality is good and compares well with imported goods, but, owing to the antiquated description of the machinery and the high price paid for labor, there is great difficulty in competing with home prices.

LABOR.

There is little free labor of any sort to be had, all natives employed being servicals, or contract laborers, which means that they are purchased and are under contract for a term of five years, controlled by a Government inspector. Should this system be done away with, fears are entertained that it would cause ruin to this part of the province, as the natives would then have no wish to do work of any sort.

STEAM NAVIGATION.

A Portuguese line of steamers, called the Empreza Nacional, calls here once a month, stopping forty-eight hours, leaving Lisbon on the 6th of every month and arriving here about the 7th of the succeeding month. Lately they have been somewhat irregular, arriving sometimes a week late. These are the same steamers that call at Loanda, Mossamedes being the last port of call. A new line is expected to start in July, called the Portuguese Royal Mail Company, which is under contract with the Government to go as far as the Cape and Delagoa Bay. From Mossamedes the steamers are to go to Lisbon in eighteen days.

PROVISIONS.

Fowls and ducks are dear, ranging from 72 cents to $1.08 each, but fish are exceedingly cheap. Good beef can be had at 5 to 6 cents per pound. Most of the provisions that come from Europe are sold at very high rates. Vegetables and fruit are plentiful and cheap, except during the months of April and May, when they are scarce. Fish are also scarce during these months.

COAST PORTS OF MOSSAMEDES.

The most important are St. Nicolan, Peambo, Bahia de Pipa, Mossamedes Bay, or Little Fish Bay, Pinda, Alexandre, Tiger or Great Fish Bay. The last four are large and offer good anchorage for vessels of any size. There are two small colonies of fishermen at Port Alexandre and Tiger Bay, but they suffer a good deal from scurvy, owing to want of good water and vegetables.

SCHOOLS.

There are two public schools, with at present about eighty scholars, and one private school kept by a Miss Deeham, an English lady who has been a resident in the colony about ten years. Her school is well attended, having at present nine boarders, besides a large number of day scholars.

RAILWAYS.

A line of railway has been proposed to start from the town of Mossamedes to go about 200 miles into the interior. If this should be carried out it will be without doubt the making of the colony, as the great difficulty to contend with at present is the expense and time of transport. A colony of Boers established at a place called Humpata do all the transport by means of large wagons drawn by sixteen oxen. The construction of a railway would be easy, except at the passage of the Schella Mountains, which vary in height from 800 to 2,100 meters, the place proposed for the crossing being at the former altitude. The distance from the coast to this pass is about 120 miles. After passing the Schella Mountains the country is said to be magnificent, Europeans being able to work in the fields. European fruits, corn, and potatoes grow readily; fine timber also exists. Once such transport is arranged a good trade could be done with the natives in rubber, etc., which at present goes to Benguella although a much further distance.

COLONIES IN THE INTERIOR.

Three colonies of emigrants from the island of Madeiro have been established in the interior by the Government, called Colonia de La de Bandeira, Colonia St. Janiario, and Colonia S. Pedro. As far as I can gather these are likely to prove successful. They are able to produce nearly everything needful for their own requirements. They come out for five years, each working at his own trade, but agricultural people are preferred. They can not leave the colony before the expiration of their five years unless they reimburse the Government for what expense they may have cost. A subsidy is allowed by the Government to each colony, but I have not been able to ascertain the amount. Up to the present the emigrants number about seven hundred and fifty souls, including children. The Boers settled at Humpata number about one hundred.

AGRICULTURE.

I am able to give little information about this, except that about one hundred and thirty-one plantations have been taken up by different people estimated at 15,700 hectares (or about 40,000 acres), the principal produce being cotton, orchilla weed, sugar-cane, etc., besides the raising of cattle, etc.

About an hour's distance to the north of Mossamedes there are a number of small plantations called the hortas; these furnish Mossamedes with plenty of vegetables and fruits, including grapes, apples, pears—in fact, nearly all European fruits. Vegetables also come to great perfection.

CLIMATE.

The climate of Mossamedes is excellent all along the coast line, and on the high plains behind the Schella Mountains is suitable to Europeans. Fever is uncommon, except in the months of April and May. This season it has been more prevalent than usual, owing to the heavy rains and great heat that

have ruled all along the coast. The past season, say from February to May, has been the warmest felt all along the coast for many years, and has, therefore, been most unhealthy. Colds and slight pulmonary diseases are common in the cold season (but principally among the natives) owing to the rapid and varied changes of the temperature. Contagious diseases only appear when imported in vessels, and rarely take the form of an epidemic. Children born here are healthy, and grow up without being affected by many diseases they are subject to in Europe. The death rate is very low. During the months of April and May the east wind is sometimes very trying, bringing with it great heat, so much so that pieces of furniture will split in the houses. It also brings clouds of sand and insects. However, it is not considered unhealthy, as it dries up everything before it.

There is much room for improvement in the houses. They are small and crowded, and there is great want of cleanliness in the yards. Deposits and drying of fish in the town could all be prohibited with advantage.

The thermometer averages 15° to 20° centigrade from 15th of June to 15th of August, and during the warmest months of the year — March, April, and May — 27° to 30° centigrade; but during the past three months the heat has been more than usual, as it has been 32° all along the coast.

HUNTING.

Good sport is to be had two or three days' journey from Mossamedes, including many different species of antelope, zebras, hippopotami, elephants, lions, and other animals.

GOVERNOR.

The governor of the colony is Señor Alvaro Salles Pereira, who is subject to the governor-general of the province, resident at St. Paul de Loanda.

IMPORTS, EXPORTS, AND NAVIGATION.

The following tables give detailed information in regard to imports, exports, and navigation.

Imports into Mossamedes during the year 1887.

Description of goods.	Imported from —						Total.
	England.	France.	Germany.	Portugal.	Holland.	Belgium.	
	Reis.	*Reis.*	*Reis.*	*Reis.*	*Reis.*	*Reis.*	*Reis.*
Cotton goods	18,735,556	502,450	220,710	2,832,445	324,200	.....	22,775,361
Rice	1,623,580	.....	1,509,900	.....	.....	.....	3,133,480
Sugar	475,510	.....	1,292,105	25,160	322,520	.....	2,347,055
All champagnes, cognac, and wines in bottles	108,800	600,780	144,900	807,818	190,140	.....	1,852,438
Tea	819,300	.....	95,650	27,000	.....	.....	941,950
Gums (different qualities)	140,600	22,500	.....	27,500	.....	617,800	808,400
Woolen goods	984,120	315,700	353,500	2,051,080	.....	.....	3,748,400
Linen goods, ropes, canvas, etc	760,215	452,900	.....	1,738,464	.....	.....	2,951,579

Imports into Mossamedes during the year 1887—Continued.

Description of goods.	Imported from—						Total.
	England.	France.	Germany.	Portugal.	Holland.	Belgium.	
	Reis.	*Reis.*	*Reis.*	*Reis.*	*Reis.*	*Reis.*	*Reis.*
Butter	323,600	167,400	1,702,310	11,400	.....	.....	2,204,710
Metals of different qualities, including copper, steel, iron, zinc, lead, etc., nails, of all qualities, etc.	918,060	1,227,000	150,300	2,672,566	.....	88,800	5,056,726
Salt	.....	.....	.....	129,600	.....	.....	129,600
Gunpowder	670,100	.....	.....	.....	.....	.....	670,100
Soap	515,200	30,600	.....	1,032,825	.....	.....	1,578,625
Candles	.....	95,000	88,190	80,130	136,585	262,175	662,080
Wine in casks	.....	33,400	.....	16,707,395	.....	.....	16,740,795
Trade guns	.....	43,200	.....	.....	.....	1,447,300	1,490,500
Petroleum	.....	90,000	.....	.....	.....	.....	903,468
Tobacco	.....	.....	.....	67,720	387,730	290,320	745,770
Silks	.....	91,776	.....	557,200	.....	.....	648,976
Cigars	.....	.....	190,000	.....	.....	209,360	399,360
Alcohol	.....	.....	.....	6,000	.....	.....	6,000
Vinegar in casks	.....	.....	.....	733,930	.....	.....	933,930
Sundries	9,958,124	4,034,220	1,083,160	24,627,697	212,266	644,200	46,162,562
Flour	.....	.....	.....	10,034,400	.....	.....	10,034,400
Total	36,032,765	7,706,926	6,830,725	64,370,330	1,573,441	3,559,955	126,976,265

NOTE. — The column included under the head of "all other countries" is omitted from the above table. Petroleum to the value of 617,800 reis was imported from the United States. The values given in these tables are in Portuguese reis, of which 1,000=1 milreis=$1.08 American.

Exports from Mossamedes during the year 1887.

Products.	Destination.	Value.	Duty.
		Reis.	*Reis.*
Rum	Lisbon	35,700	.....
Coffee	...do	12,000	360
Cotton	...do	9,845,775	.....
Rubber	...do	54,600	1,638
Wax	...do	704,120	21,212
Hides and skins	...do	2,809,160	84,302
Almeidina	...do	4,984,900	149,547
Ivory	...do	1,338,250	26,745
Sundry products	...do	449,000	.....
Orchilla weed	...do	6,764,300	202,724
Rum	Portuguese possessions	8,148,800	.....
Cotton	...do	138,732	.....
Bullocks	...do	4,751,000	141,750
Dried salt beef	...do	163,000	.....
Dried salt fish	...do	32,158,000	906,782
Sundry products	...do	533,620	.....
Rum	Banana (Congo River)	3,800	.....
Bullocks	...do	663,000	33,150
Sheep	...do	101,250	.....
Dried salt fish	...do	3,993,600	231,672
Sundry products	...do	111,400	.....
Bullocks	Gaboon	800,000	40,000
Hides	Madeira	282,600	8,318
Total		78,846,607	1,848,209

Shipping at the port of Mossamedes during the year 1887.

Nationality.	Entered.						Cleared.					
	Steamers.		Sailing vessels.		Total.		Steamers.		Sailing vessels.		Total.	
	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.	No.	Tons.
Men of war:												
German	1	303	.....	.....	1	303	1	303	.....	.....	1	303
French	3	5,054	.....	.....	3	5,054	3	5,054	.....	.....	3	5,054
Portuguese	11	8,564	2	1,199	13	9,763	11	8,564	2	1,199	13	9,763
Portuguese merchant vessels	18	27,028	53	4,178	71	31,206	18	27,028	54	4,358	72	31,380
Total	33	40,949	55	5,377	88	46,326	33	40,949	56	5,557	89	46,506
Coasting vessels and boats	.....	.....	166	2,813	.....	.....	.....	.....	162	2,650	.....	.....

ROBERT S. NEWTON,
Vice-Consul.

UNITED STATES CONSULATE,
St. Paul de Loanda, May 21, 1889.

CONVENTION OF GERMAN IRON-MINING ENGINEERS.

REPORT BY CONSUL PARTELLO, OF DÜSSELDORF.

The Society of German Iron-mining Engineers and Manufacturers held a special meeting in this city, at the large Tonhalle building, on June 15, 1889, and the following notes of the proceedings are submitted as possibly containing some points of interest for our American engineers and railroad men.

The general director opened the meeting with the following statement and report:

(1) Two journeys to Bremen and Kiel were made by officers of the society, which were attended with success; the membership of the society, before that time numbering 753, after that visit increased to 792, at present the roll containing 852 active members, and the number of monthly publications issued on steel and iron being 1,900 to date.

(2) A commission had been selected for the examination of iron and steel manufactured all over Europe in order to become familiar with the various processes of producing certain qualities of such material.

(3) For the supply of material for public works certain regulations had been decided upon by the society which were considered of great importance to them, the principal point being that samples should always be procured and examined, as lately done at Charlottenburg by the minister of public works at that place.

IRON VERSUS WOODEN RAILROAD SLEEPERS.

During the proceedings points were raised as to the rails of different kinds, including those for street-car service, also iron sleepers or ties, and long discussions followed each point raised. General Director Brauns

brought forward and had discussed the relative merits of iron and wooden sleepers. He said that since 1875 iron sleepers were in use in Germany, at first with the Bergisch-Härkisch and Rheinische railroad lines. The German forest could not produce sufficient wooden sleepers without great damage to the forest culture and the climate. For iron beams (sleepers) the principal kind used is what is known as the Thomas fluss-iron, which, it is claimed, is superior to the material used in any other country, and in the manufacture of this kind of iron and the technical machinery for the same great progress had been made in Germany, also much economy had been brought about by forms and designs. For the Prussian railway lines there was sold and delivered the following:

Year.	New wooden sleepers.	New iron sleepers.
	Number.	*Number.*
1885-'86	1,507,000	622,000
1886-'87	1,502,000	522,000
1887-'88	1,657,000	493,000

The appropriation from the State for the past year was 9,000,000 marks for wooden sleepers and only 4,000,000 marks for iron sleepers, economy being observed in this respect on the part of the Government in favor of wooden beams, on account of the cheapness in price, with profit to the State treasury. It is estimated that the yearly import of wooden sleepers into Germany will amount in value to 1,800,000 marks. A resolution was passed deciding to make application to the railroad minister with a view to the more general use of iron beams.

Mr. Lueg, general director, said that the situation of the iron industry "was at present not good, and that, while the mills had yet much to do for inland works, the export trade had fallen off to an alarming extent."

Director Schlink, of Mülheim, gave some points in regard to the weight of cross-ties or iron sleepers in use on German railroads; that such cross-ties were much too light, the general weight at present being about 40 kilograms or 80 iles, while they should be at least 60 kilograms. The rails should be heavier, which would prevent accidents, especially on curves, and would facilitate the speed of trains and help on the work and wages of laborers and mechanics.

Mr. Vahlkampf gave the following statistics in relation to the cost of iron and wooden sleepers or cross-ties:

Iron sleepers.—Berg. Mark. Railway: Sleepers 54.2 kilograms, 2,500 millimeters long, 6.39 marks; small iron castings, 2.4 kilometers, 0.71 marks; total, 7.10 marks, from which the value of all material should be deducted, 2.77 marks; net cost, 4.33 marks. Rhenish Railway: Cross-ties, 2,500 millimeters long, 6.25 marks; small castings, 0.74 marks; total, 6.99 marks; deduct value of old material, 2.78 marks; net cost, 4.21 marks.

Wooden ties or sleepers.—Oak ties, 4.23 marks, support plates, 0.43 marks; nails, 0.53 marks; total, 5.19 marks; deduct value of old material, 0.50 marks; net cost, 4.69 marks.

Iron cross-ties will last about thirty, and wooden ties only about fifteen years, and it was decided that under all circumstances the iron ties were the most durable and best for use on railroads.

INTERNATIONAL ANALYSES OF IRON AND STEEL SAMPLES.

The British Association for the Advancement of Science some days ago appointed a commission for the best method of making international rules and regulations for the analyses of iron and steel. The committee were directed to enter into negotiation with other foreign committees of the same nature in order to receive and examine normal samples of iron and steel, the chemical composition of which is to be carefully determined and defined. These samples, as before decided, are to be delivered at an appointed place, and are to be referred to when decisions are to be made in reference to analytical methods and use of such material.

Professor Langley, of the Michigan University, was requested to superintend this matter of samples, and to have samples sent to the respective associations in the United States, England, France, Germany, Switzerland, and Sweden, samples not to be sent to more than seven chemists of the abovenamed countries. If the results of the analyses of these samples are sufficiently harmonious, the average of the results of the analyses shall be accepted by all as the normal composition. It was decided that on the whole 150 kilograms of the samples selected as normal are to be prepared, making about 5 kilograms for each of the five interested countries.

It was claimed that the endeavors of the British association were of the greatest importance, as there is great need of uniformity in methods of examining and making analyses of iron and steel, and the international trade in steel and iron would be greatly benefited by such harmonious methods. Many questions and doubts are entertained by the society as to the efforts of the British association, but progress must nevertheless be admitted.

RAILWAY SPEED IN ENGLAND AND GERMANY.

Discussion followed regarding the speed of trains in England and Germany, it being stated that in England the speed was 50 per cent. greater than in Germany, and it was urged that changes should be made in the condition of the road-beds so as to facilitate the speed of German trains. Director Schlink said that the minister of public works made the following statement at a session of the Landtag: "The wishes of many parties for greater speed in German trains can not be complied with, because the German trains are now the fastest on the whole continent." (Roars of laughter.) "But," resumed Director Schlink, "the minister is wrong about this, as the quickest train in Germany is the 'yagdzug,' from Berlin to Hanover, which makes 63 kilometers per hour, while the quickest train in England, from Grantham to London, drives 84 kilometers per hour." Generally considered, the English trains drive 50 per cent. faster than the German trains, and less accidents occur there than here.

RAILWAY ACCIDENTS IN ENGLAND AND GERMANY.

The average killed in Germany to 1,000,000 travelers is 2.39, and in England 1.70. By these figures it is evident that our whole road-bed is much too light, as the rapidity of trains depends solely upon the strength of the road-bed. Director Thielen, of the Phœnix Iron Company, Ruhrort, said that the limited use of iron ties on German roads is a poor recommendation for the trade, as foreign countries might think that iron ties were of no use for railroads.

D. J. PARTELLO,
Consul.

UNITED STATES CONSULATE,
Düsseldorf, July 13, 1889.

ENGINEERING TRADES IN GREAT BRITAIN.

REPORT BY CONSUL WIGFALL, OF LEEDS.

I have the honor to transmit a report which I have received from Mr. Matheson giving a half-yearly review of the engineering trades in Great Britain. Mr. Matheson is managing director of a large Leeds company, and his opportunities for observation are more than ordinarily extensive and thorough.

F. H. WIGFALL,
Consul.

UNITED STATES CONSULATE,
Leeds, July 20, 1889.

ENGINEERING TRADES' REPORT.

[Inclosure in Consul Wigfall's report.]

The gradual but continuous improvement during the whole of last year, which at the time of our January report had culminated in a wide-spread activity, has since increased in almost all branches of the engineering trades, and there is at present no sign of reaction. The abundance of capital, the moderate bank rate of interest for borrowed money, and the good harvest in view all tend to encourage enterprise. The resources of the larger works are being taxed to the utmost, and the vast powers of production which this country possesses are more than ever evident. In many departments of trade the increase in prices only covers the enhanced cost of fuel, material, and labor, the advantage to the manufacturer lying mainly in an enlarged output without a corresponding increase in fixed charges.

Coal.— Repeated advances in the wages of the coal getters have been more than balanced by a simultaneous rise in prices, and as old contracts work out the coal owners are reaping better profits than they have done for some years past, especially in the kinds of coal used for metallurgical and other manufacturing purposes. In the steel and iron trades the cost of fuel tells heavily, and there is even a greater advance in coke than in coal.

Iron.— The prices of all kinds of finished iron have been steadily rising since January. An increase in the consumption of iron may be always taken as an index of general activity, and for the engineering and ship-building trades the demand is at present great and wide-spread. The restrictions which the puddling process always imposes on the production of malleable iron has most effect in the hotter months, and just now there is considerable diffi-

culty in supplying the current needs of purchasers. Without venturing to forecast the future, it is significant that purchasers seem desirous and makers unwilling to contract for future deliveries at the present current prices.

Steel.—Manufacturers have not for many years past been so busy as at present, and, as a usual accompaniment to a greater output, the prices have advanced step by step during the last few months, and there is every sign that yet dearer prices will be demanded in the immediate future. The demand for plates and other ship-building steel had even in January become so great and prices had advanced so rapidly that a maintenance of price rather than an increase is all that may be expected. With rails, however, the demand has steadily grown; prices have advanced during the last few weeks and appear to be still tending upwards, especially where early delivery is called for. The increased cost of fuel and the rise in wages absorb a large share of the advance. Although the total output capacity of the rail-mills of this country can not be less than 1,500,000 tons per annum, this power of production is, so far as the conversion and casting of ingots is concerned, partly absorbed in the production of plates and other forms of steel, so that the competition for rails, wide as it is, is restricted. Last year the export of steel rails was about 700,000 tons, and the purchase for home railways was about 300,000 tons, but the present rate of production indicates a higher total for this year. Boiler plates and forgings are in great request, and it is impossible to place orders with any hope of early delivery. Not only in price but in regard to other conditions makers are in a strong position, and, while fully maintaining the quality of their steel, give the preference to orders free of board of trade or other official tests which involve unnecessary trouble and delay. The increasing dimensions and weight of plates and forgings for ships' boilers and marine engines is met by a corresponding increase in the strength of all the apparatus of manufacture—mills, presses, shears, bending rolls, and other appliances having now a scope and power which a few years ago would have been deemed impossible.

The following table shows the fluctuations in values during the last five years:

Description.	Per ton.						
	July, 1884.	July, 1885.	July, 1886.	July, 1887.	July, 1888.	Jan., 1889.	July, 1889.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Steam coal, f. o. b. at Cardiff	0 11 6	0 10 3	0 8 9	0 9 3	0 10 6	0 13 0	0 13 6
West Hartley coal, f. o. b. at Newcastle	0 9 6	0 9 0	0 8 3	0 8 6	0 8 3	0 9 0	0 9 6
Pig-iron at Glasgow, No. 3	2 1 6	2 1 0	1 19 0	2 2 6	2 1 6	2 2 6	2 4 0
Pig-iron at Middlesborough, No. 3	1 17 0	1 12 0	1 10 0	1 14 6	1 12 0	1 14 0	2 0 0
Iron ship plates at Middlesborough	5 0 0	4 15 0	4 7 6	4 12 6	4 17 6	5 12 6	6 5 0
Iron bridge plates in South Yorkshire	6 15 0	6 0 0	5 5 0	5 7 6	6 5 0	6 10 0	7 0 0
Steel ship and bridge plates	7 15 0	7 2 6	6 5 0	6 5 0	7 0 0	7 10 0	7 10 0
Steel rails, f. o. b.	5 0 0	5 0 0	4 0 0	4 3 0	4 0 0	4 2 6	5 0 0

Scrap iron and steel.—Scrap iron and steel of all kinds have been in considerable demand during the past half-year, and prices are very firm. Although partly due to an increased consumption at home, current values have mostly depended on the demand for export. In this regard Italy continues as a steady customer; trade with the eastern ports of the United States has been dull, but there have been considerable shipments to San Francisco. At present the following are approximately the values per ton, free on board, London: Old flange rails, 60*s.*; double-head rails, 63*s.*; heavy scrap-iron, 50*s.*; railway spring steel, 50*s.*; old iron fish-plates, 63*s.*

Copper.—The collapse, predicted in our last report, of the combination or syndicate which for more than a year had maintained a nominal and fictitious value took place in March of this year, and there was a rapid fall from £77 per ton to £38. The large number of mines that must cease working when the price of copper falls below £45, the increasing demand for

electrical purposes, and the general activity of the engineering trades all tend to maintain values, even in the face of accumulated stocks, so that the range for some time to come will probably be limited to variations between £40 and £50. The stimulus which the temporary high prices gave to mining enterprise has tended to widen the area of supply, and will in the long run be of advantage to engineers.

Locomotives and rolling stock. — All the leading firms of engine builders are well occupied; the home railways are giving out large orders to meet their growing traffic, and the demand from Australia, India, and South America is brisk and likely to continue. The keen competition which exists between the English and Scotch firms has prevented the rise in prices which the condition of trade and cost of materials would seem to justify, and, judging by the moderate prices at which recent contracts have been let, it appears as though locomotive builders were anxious to secure work for the coming twelve months. Not only for railway locomotives, but for the smaller engines used by contractors there has been a considerable demand for both home and abroad; the makers of such engines are consequently busy and prices are higher than a year ago. Carriage builders are busy, mainly for export.

Ship-building. — There is as yet no lull in the activity of the ship-yards, although it is evident that the reduction in freight rates which the increased tonnage will occasion must slacken the demand for new vessels. But at present steamers of every size and kind are being built at profitable prices, and marine engine builders, boiler-makers, and the numerous subsidiary trades which depend on this branch of engineering are correspondingly busy. There are, however, difficulties. Fuel, iron, and steel are dearer to an extent not always covered by contracts; and the workmen, notwithstanding liberal advances in wages, are making unreasonable demands. On the Clyde work is temporarily stopped from this cause.

Agricultural engineers. — Agricultural engineers share in the increased trade of the country, and the prospect of a good harvest promises a further improvement for the remainder of the year. While all the leading makers are busy the demand has not yet reached the power of supply, and price-lists are for the main part unaltered. The exceptional discounts obtainable during recent years by keen buyers have, however, been curtailed, and this, together with larger sales, is giving manufacturers a considerable advantage. At the annual meeting of the Royal Agricultural Society, which, a few weeks ago, was held at Windsor under favorable auspices, few actual novelties were exhibited; but there appears to be a tendency towards larger portable engines, higher pressure of steam, and a more general adoption of the compound system of working, which has proved so economical of fuel in steam-ships. Portable engines, working directly with oil vapor, used as in gas-engines, have been brought to practical success for places where fuel and water for steam-boilers are scarce. Ingenious improvements in portable railways have been exhibited, by which lines can be laid and removed so rapidly as to allow their use for such temporary purposes as the manuring of land or the removal of crops, the articulated jointing of the rails and the ingenuity of the switches and crossings being the chief points of novelty and excellence. The depletion of capital in British agriculture still prevents a proper expenditure at home, and it is on a foreign demand that engineers in this branch of trade must depend for some time to come.

Structural steel and iron-work. — All the leading factories are busy, many of them with contracts which will occupy them for the remainder of the year. There is a considerable amount of home work; the superstructure of the Tower bridge is commenced, the bridges for the Manchester ship canal are being made, bridge renewals and station improvements on the principal railways are being carried out, and structural iron-work for hotels, markets, and public buildings are examples of much that is now doing. There have not lately been such large shipments of bridge-work to India as in recent years, but there is considerable export to other countries, Japan, Canada, and South America taking a large tonnage. Iron and steel structures cost now fully £2 per ton more than a year ago.

Mechanical engineers and iron-founders. — Mechanical engineers and iron-founders have at present little need to look for customers, plant for iron and steel works, mining machinery, and electrical apparatus of various kinds being among the chief sources of employment. These

trades act and react on each other, those who manufacture tools and machinery of production being especially benefited.

Electric lighting.—Electric lighting, which in this country has developed slowly, because of the low price of gas and the legal restrictions hitherto imposed, has been stimulated by the new regulations of the board of trade, which allow improved terms to capitalists who desire to embark money in such undertakings. Manufacturers of every kind of electrical machinery and equipment are already reaping the benefit, and are likely to continue busy for some time to come. The high-tension currents about to be employed in some of the London districts will, if successful, open out a new and wide field for electric lighting.

Power transmission.—Power transmission is attracting attention in various ways. The hydraulic mains which during the past ten years have been laid down in London, though they provide a constant pressure of 700 pounds per inch, well suited for cranes, lifts, the riveting of structures in situ, and other occasional purposes, are not, so far as invention has at present been applied, so well adapted for the rotary action of small motors, for which there is a great need. Gas-engines have till lately been the only other substitute for steam, but the success of the compressed air transmission in Paris is likely to encourage its use in other countries, and the complete system, now nearly ready for working in Birmingham, will also be watched with interest. But if the electric lighting methods about to be established in London fulfill their promise, the same conductors will distribute power as well as light. It would appear that a new era is about to commence is regard to the whole question of motive power in towns.

Portland cement.—The factories in the London district, which entirely command this trade, have been very busy during the last half-year. The exportation of cement has continually grown in importance, and for more than a year past, besides the ordinary shipments to the United States and the East, very large shipments have been made to South America for the railway, dock, and sewage works in the Argentine Republic and elsewhere. The output capacity of the factories is, however, so great that prices have not risen in proportion to the increased demand, and makers are willing to contract at moderate rates if delivery be postponed. It is almost impossible to purchase for immediate shipment.

Public works.—At home no new works of any magnitude are projected, and private bills in Parliament are not so numerous even as last year. In the midland counties numerous short lines, made or promoted by the leading companies, are about to be constructed, which will open out new manufacturing and mining districts. For some of the new railway schemes authority is sought for paying interest out of capital during construction. The Forth bridge and the Barry docks approach completion; the Manchester ship canal is being rapidly pushed forward, and whatever may be its success for the anticipated transocean commerce it appears likely that the long line of wharfage it presents will develop a large and profitable local trade. Abroad railway and other projects are at present absorbing much capital, the spending of which is largely in the hands of British engineers. South America, which has for so long been a field for such works, is more than ever presenting opportunities for investment and enterprise. Buenos Ayres, besides the extensive dock works, sanitary improvements on a large scale are calling from this country not only material of various kinds, but a large number of British workmen.

The present activity is largely due to the vast accumulated capital seeking employment, and at this particular time investors are not only embarking in all kinds of public works which depend on engineers for their accomplishment, but are seeking a share in the manufacturing profits also. It can hardly be doubted that disappointment is in store in regard to many such investments, for business undertakings—not always of a sound and profitable nature—are being sold to limited companies at inflated prices, arranged only by the vendors, without any independent valuation; while in many other cases patents, without any works or tangible property whatever, are being transferred to credulous investors on terms which can not possibly allow of profit.

32 WALBROOK, LONDON, *July 18, 1889.*

FRENCH WOOLEN GOODS.

REPORT BY CONSUL WILLIAMS, OF ROUEN.

The French exhibit of woolen goods at the Paris Exposition is certainly very imposing, and has been prepared with great care, and leaves a favorable impression upon all vistors. The marked absence of similar goods from, or the indifferent specimens presented by, other nations, apart from those sent from Verviers, favors greatly the French manufacturers, who improve the opportunity, and have already secured many foreign orders. The sulking of the English and Germans, whose manufacturers could have made a grand display, has powerfully aided the French manufacturers. No opportunity for invidious comparison in this line can arise, and many foreigners leave with the idea that France stands unrivaled in its woolen manufactures.

At Fourmies the situation of the market for combed wool remains the the same. The stock is firmly held. The price of the short and broken filament is well maintained. The condition of affairs is quite satisfactory. Yarn has advanced, and more especially for No. 77 millimeters and upwards. The fabrics have continued to advance slightly, but have scarcely kept pace with the advance of yarn.

The following table shows the transactions in five principal centers of northern France during the month of May of the years 1888–'89:

Centers.	Combed wool.		Yarn.	
	1888.	1889.	1888.	1889.
	Kilograms.	*Kilograms.*	*Kilograms.*	*Kilograms.*
Reims	991,167	843,268	48,458	56,191
Roubaix	2,151,650	2,218,433	380,932	618,112
Tourcoing	1,515,672	1,708,329	251,265	335,712
Amiens	134,250	76,558	76,669	63,660
Fourmies	279,003	213,184	345,003	448,880
Total	5,074,751	5,059,772	1,102,357	1,522,555

The following table indicates the foreign trade of France in wool and its products during the first four months of the year 1889 compared with the corresponding period of the years preceding:

Products.	1889.	1888.	1887.
Imports.	*Francs.*	*Francs.*	*Francs.*
Wool	155,014,000	143,151,000	140,676,000
Woolen yarn	4,382,000	4,682,000	3,365,000
Woolen fabrics	17,111,000	17,778,000	18,250,000
Exports.			
Wool	50,580,000	39,970,000	36,012,000
Woolen yarn	17,251,000	10,096,000	10,717,000
Woolen fabrics	110,308,000	126,728,000	116,566,000

The following table presents the comparative quantities of woolen materials exported from France during the first three months of the years 1889, 1888, 1887:

Description.	1889.	1888.	1887.
Wool:	*Kilograms.*	*Kilograms.*	*Kilograms.*
In bulk, unwashed or simply washed	59,548,560	49,048,950	46,062,400
In bulk, entirely washed and bleached	1,230	8,430	9,110
Combed and carded	28,550	15,680	9,620
Waste of	1,796,200	1,249,050	1,320,180
Waste of material partially wool and shoddy	145,970	299,020	258,530
Persian carpets	12,641	15,242	19,260
Sundries	107,226	92,551	113,900
Cloths, kerseymeres, etc.	523,100	713,002	499,800
Furniture material	2,324	14,621	5,200
Sundries	181,404	129,663	126,400
Hosiery	19,943	27,387	36,500
Lace and braids wholly of wool	22,008	14,007	20,000
Mixed furniture stuff	304	1,982	1,000
Sundries	636,949	632,777	483,700

During the month of April last Belgium imported 76,260 kilograms of woolen yarn, 125,070 francs' worth of woolen fabrics, such as cloths, kerseymeres and the like, 106,610 francs' worth of coatings and similar heavy fabrics, and 1,121,960 francs' worth of light woolen goods. The exports, meanwhile, consisted of 1,054,550 kilograms of woolen yarn, 75,700 kilograms of cloths and the like, and 17,170 kilograms of coatings and other heavy fabrics, and 39,220 kilograms of light woolen goods.

CHAS. P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, June 17, 1889.

THE IRON INDUSTRY OF CHINA.

REPORT BY MINISTER DENBY, OF PEKING.

I have the honor to inclose an imperial decree commenting on the late proposal of the viceroy of Canton to develop the iron industry in the two Kuang.

In order to foster this important industry he has abolished the inland duties on iron and the prohibition against its export. He now proposes to investigate by a commission the subject of abolishing the heavy duty now levied on furnaces. Such a plan put into force for three years would not involve a large diminution of the revenue, but would greatly benefit the iron producers by doing away with illegal fees. He proposes also the creation of a joint stock company to work the foundries with foreign machinery. It would seem that the mind of this distinguished man, Chang Chi Tung, had undergone a change. He now, while still materially seeking to retain for

his own people the benefits of industrial enterprises, favors the extensive use of foreign methods in building railroads and establishing electric lights and foundries. I do not doubt that the next process in his mental development will lead him to the only correct conclusion; that is to say, that foreign talent and honesty and will-power are indispensable to the successful introduction of foreign improvements.

I have long advocated the idea that the successful work of Sir Robert Hart, inspector-general of imperial customs, furnishes the model for future enterprise in China. When China puts at the head of her railroad system a distinguished foreigner, and when she does this also in a department of banking, a magnificent improvement will be inaugurated which, in its results, will astound the world.

CHARLES DENBY,
Minister.

UNITED STATES LEGATION,
Peking, May 29, 1889.

[Inclosure in Minister Denby's report.]

DEVELOPMENT OF THE IRON INDUSTRY IN THE TWO KUANG.

The viceroy of Canton states that iron is the chief mineral production of the two provinces within his jurisdiction. And yet for many years past there has been an immense consumption of foreign iron all over the country. Under these circumstances he considers it absolutely necessary that the native iron industry should be further developed, and with this object in view he has already procured the abolition of inland duties on iron and the removal of the prohibition against its export. A commission which he appointed to investigate the whole subject in both provinces last year reports that the great obstacle to the extensive production of native iron is the heavy duty levied upon furnaces. Of these there are three kinds: Government furnaces, which pay each 53 taels a year to the financial commissioner; local furnaces, which pay an annual fee of 5 taels to the salt commissioner; and unlicensed furnaces, which pay nothing at all. It is now proposed that all distinctions should be abolished, and for the period of three years no tax should be levied upon furnaces of any kind. This will only involve a diminution in the revenue of something less than 2,000 taels, but the gain to the iron producers will be much larger than is represented by the above sum, for the exemption of the furnaces from all Government taxation will necessarily imply the discontinuance of the illegal fees which have hitherto been exacted, and which have proved the real hindrance to the development of the trade. A scheme is under consideration for the establishment of a joint stock company to work the foundries with foreign machinery, and great results are expected from the adoption of foreign methods of smelting, which are now receiving careful attention. If only the native industry can be stimulated and the consumption of the foreign article gradually checked, all classes of the community will benefit by the change, and no regret need be felt for the small sacrifice of revenue which it will for the present entail. The viceroy's views on the subject have received the cordial approval of the governor of Kuang-Si, and the memorial is presented in their joint names.

THOMAS SLAG FERTILIZER.

REPORT BY CONSUL FALKENBACH, OF BARMEN.

Professor Dr. Wagner, of Darmstadt, has just completed a series of experiments on a system invented by himself for the purpose of ascertaining the value of Thomas slag as a fertilizer, or rather in what way it may be most profitably employed for this purpose. The results obtained are of a most instructive kind. The slag was spread out on three different fields, of which the first contained 3 per cent., the second 5 per cent., and the third 7 per cent. of carbonate of chalk. The plants experimented with were flax, rape, wheat, barley, peas, and mustard. The manures used were superphosphate Thomas slag in various degrees of fineness, unopened Peru guano, boiled bone meal, and powdered coprolite meal (coprolites are the fossil excrements of antediluvian animals). The experiments with wheat, barley, and flax on two different fields gave the following concordant results: In order to obtain the additional effect which every kilogram of superphosphated phosphoric acid (dissolving in ordinary water) produced with the first of the plants, resulting from the manuring, there were necessary 2 kilograms of phosphoric acid in form of Thomas slag meal, 3 kilograms of phosphoric acid in form of unopened Peru guano, 10 kilograms of phosphoric acid in form of boiled bone meal, 10 kilograms of phosphoric acid in form of coprolite meal. Professor Dr. Wagner therefore comes to the conclusion: (1) if the various series of experiments have unitedly proved that 2 kilograms of Thomas phosphoric acid have affected in the first year after the manuring the same as 1 kilogram of phosphoric acid, soluble in water, it is advantageous to employ the Thomas phosphoric acid, because 2 kilograms of it cost only 40 pfennigs, while 1 kilogram of phosphoric acid, soluble in water, costs 54 to 60 pfennigs; (2) if 2 kilograms of Thomas phosphoric acid produced the same additional effect upon the plants following on the first manuring as 10 kilograms of bone meal phosphoric acid, then the bone meal must be regarded as a too expensive fertilizer when compared with Thomas slag. However, in order to ascertain the total fertilizing value of the various phosphates and their comparative market value, it is necessary to watch the effect of each phosphate on the resulting fruits and ascertain its extent so long as any effect is noticeable at all. Wagner has, in consequence, shown the after-effect of the various phosphates as far as it was visible on summer rye, rape, and mustard in the second year after the manuring. He has proved that the after-effect of the phosphoric acid resulting from the 2 kilograms of Thomas phosphoric acid and remaining in the ground was in the second year after the manuring far greater than the after-effect of the 1 kilogram of soluble phosphoric acid, and further that the fertilization with 1 kilogram of soluble phosphoric acid, inclusive of the effect in the second year, was by no means so great as in the case of 2 kilograms of Thomas phosphoric acid.

Under the present condition of price it is therefore extremely advantageous to employ powdered Thomas slag as a fertilizer, and, on the other hand, it is not advantageous to purchase bone meal, because the latter works too slowly. Wagner, however, adds one reservation to this advice. He insists that the Thomas meal must be derived from a reliable source, that the proportion of fine meal (at least 75 per cent.) should be guarantied, and that a sample of the substance received should be sent to a proper controlling station for analysis as to the percentage of phosphoric acid and fine meal.

JOSEPH FALKENBACH,
Consul.

UNITED STATES CONSULATE,
Barmen, June 4, 1889.

TRADE AND INDUSTRIES OF BRITISH COLUMBIA.

REPORT BY CONSUL STEVENS, OF VICTORIA.

During the past year the number of arrivals of American vessels at Victoria was 495, at Vancouver, 184, and at Nanaimo, 203, the aggregate tonnage amounting to 868,016 tons; and of foreign vessels, 692, whose aggregate tonnage was 548,915 tons. Total tonnage for the year was 1,416,931 tons, showing a large increase over the year 1887.

The value of exports during the past year to the United States of the productions of the province shows a noticeable increase in the article of coal, which to the value of $1,720,468 was exported, against $1,267,606.58 exported in 1887.

Furs, hides, and skins shipped during the past year amounted to $310,-535.18; the shipment for the previous year was valued at $332,085.39.

Treasure shipped during 1887 was $559,740.06 in value; that during last year amounted to $519,877.40.

The value of salmon, coal, lumber, furs, hides and skins, wool, oil, and other lesser exports that passed the custom-house at Victoria last year is reported as follows: Products of the mine, gold in dust, etc., $449,563; fisheries, $1,001,819; forests, $1,105; animals and their produce, furs, skins, hides, etc., $295,241; agricultural, $750; miscellaneous, $13,676; manufactures, $22,880; total, $1,785,034; not the produce of British Columbia, $26,611; total, $1,811,645.

The total exports of the product of the forest, being sawed lumber, masts and spars, logs, piles, staves, laths and pickets, telegraph poles, etc., from Burrard Inlet, during 1888 were 90,247,077 feet of planks, etc., 6,713,000 laths and pickets, and 243,000 staves, and a small number of logs, piles, telegraph poles, etc., amounting to a total export valuation of $485,046, as obtained from the custom-house at Vancouver. This product was shipped to foreign ports, London, Honolulu, and to ports in China, Australia, and South America.

The lumber and spars from Chemainus (this island), the only other lumber-exporting section, was shipped to San Francisco and was but $15,093 in value, making the total export of the province a little over a half million dollars. There should, however, be added to this from the same port shipments to Australia, value, $32,600, and Mexico, $5,500.

As an exhibit of the increase of the province commercially, not without fluctuation, I give the following statement of imports and exports compiled from the books of the custom-house:

IMPORTS.

Year.	From Canada.	From all countries.	Duties.
1872	$22,915	$1,790,352	$342,400.48
1876	129,735	2,997,597	488,384.52
1877	163,142	2,220,968	403,520.21
1880	208,072	1,689,394	450,175.43
1882	449,768	2,899,223	678,104.53
1883	624,207	3,937,536	907,765.64
1885	927,654	4,089,492	966,143.64
1888*	.....	2,977,533	825,729.28

* Victoria only.

Of the imports from foreign countries about 60 per cent. in value were from the United States.

EXPORTS.

Years.	Mines.	Fisheries.	Forest.	Animals.	Agricultural and manufactures.	Total.
1872	$1,389,585	$37,706	$214,377	$214,700	$1,682	$1,858,050
1876	2,032,139	71,338	273,430	329,027	3,148	2,709,082
1877	1,708,848	105,603	287,042	240,893	4,583	2,346,969
1880	1,664,626	317,410	258,804	339,218	3,943	2,584,001
1882	1,437,072	976,903	362,875	300,429	3,562	3,080,841
1883	1,309,646	1,332,385	407,624	287,394	7,234	3,344,283
1885	1,759,502	727,672	262,071	414,364	8,272	3,171,881
1888*	449,563	1,001,819	1,105	295,241	23,630	1,771,358

* Victoria only.

Imports, exports, and duty for year ended June 30, 1888.

Port.	Imports.	Exports.	Duty.
Vancouver	$280,000	$553,539	$63,000.00
New Westminster	108,485	96,250	20,747.00
Nanaimo	188,678	1,240,393	41,584.00
Victoria	2,922,395	2,122,939	748,613.98

THE FUR-SEAL INDUSTRY.

Victoria, as is well known, has been, since the early days of the Hudson's Bay Company, the central mart in this northwest section for peltries of all kinds. Since about the beginning of the present decade the hunting of the

fur-seal has been vigorously pursued from this port. There are some twenty-one vessels, varying from 26 to 126 tons register (an aggregate tonnage of 1,737 tons), employing four hundred and fifty-eight men, and valued at about $126,000, engaged in hunting the fur-seal. These vessels, some of them having small steam-power, leave here about the 1st of January and proceed southward, returning in May and landing the skins, taken, some of them, as far south as San Diego, Cal., and along the coast up. They then leave again for the north, going as far as the Behring Sea, returning in September. The total catch for 1888 amounted to 26,720 skins, much smaller than for recent previous years. Of these 14,897 were reported as the "Behring Sea collection," the distinctive name given those taken far north, in the neighborhood of the Aleutian Islands, and claimed to be finer furs than any other.

These skins are sold here in bundles, salted to preserve them, and they may be kept many months in that condition without injury. Ordinarily sales are made at so much per skin for the lot; sometimes, however, they are sold in assortments of males, females, and pups, the average price of the latter being $6 per skin. They are shipped from here to London, where they are dressed and dyed, paying a duty when they reach the United States, as they mostly do, of 30 per cent. on their then value of about $22.50 per skin.

During the years 1886–'87 some eight of these vessels were seized in the northern waters by United States revenue-cutters for violation of the law of July 1, 1870, "to prevent extermination of fur-bearing animals." No seizures were made in 1888.

CANNED SALMON.

There are seventeen canneries on the mainland still pursuing a remunerative business, which has been somewhat interfered with by the increasing business of this character in Oregon, Washington Territory, and Alaska. Total output, 202,011 cases, principally to England.

MINES.

Recently gold mining has increased considerably, and with profit to those employed. The exact output for the year is nowhere stated.

Notwithstanding the constant claim that productive ores are plentiful and easily worked the output is not large. During eighteen months past, in the Illicillewaet district, a new industry has developed, owing to the discovery of galena in considerable quantities. Ore has been taken out to the value of $14,656 silver and $10,336 lead (total $24,992) from the mine now being worked, which lies in the Selkirk range of mountains some 3,000 feet above the track of the Canadian Pacific Railway, and some 400 miles east of the town of Vancouver. An energetic and wealthy company has this enterprise in hand, and extended operations and large results are confidently anticipated.

The export of iron ore from Texada Island, which lies about 40 miles northerly from Nanaimo and close to this island, commenced about the middle of 1886 by shipments of the ore to the smelting works at Irondale, near Port Townsend, Wash. Ter., and up to the month of March, 1887, some 4,140

tons, valued at $10,350, had been shipped. The expense attending smelting proved so great that the industry was abandoned until March of the year 1888, when improved methods in smelting made it practicable to resume it, and ore to the value of $28,720 was exported to the same port during that year.

The export of silver ore and a small amount of platinum from near Illicillewaet also found shipment through Vancouver for the first time during the latter part of 1887, since when some $30,000 worth has been sent to San Francisco.

AGRICULTURE.

The Dominion has endeavored to foster agriculture in this province by provision for two experimental farms, one of which, commenced in the early part of 1888, is at Agassiz, on the mainland; the other will be established at some point on this island. There are no exports of cereals or any farm produce from this island as yet, or from the mainland. No statistics showing the amount of arable land are obtainable.

The farming industry of the province, as compared with its other resources, is small, and is also limited by the small portion as yet known of its tillable soil in all its vast area, and very little of this portion lies together in one tract. On the mainland, in the valley of the Fraser River, and in the Chilliwack district and about Okanagon there are farms, in no case of any extent, though fertile, producing sometimes 60 bushels of wheat to the acre.

On this island — which is in large part unexplored — in the Cowichan, Quamichan, and Saanich districts, and about Comox (some 25 miles beyond Nanaimo), there are numerous small farms. Many of these give employment to a single hired hand, and but few of them have more than three. Much more of the province is suitable for stock raising, but its principal wealth consists in its mines, forests, and fisheries.

THE ORIENT STEAM-SHIPS.

The steam-ships of the Canadian Pacific Railway and Steam-ship line made eighteen trips during the year 1888 between the ports of China and Japan and Vancouver, leaving Hong-Kong and generally calling at Amoy, Shanghai, Nagasaki, Kobé, and lastly at Yokohama, from whence they proceed to Vancouver, ordinarily making the voyage between the two ports last named in fourteen days. They are mostly large vessels, about 3,000 tons, and bring full cargoes destined largely for United States ports by transportation over the Canadian Pacific Railway. They usually carry on their return 2,000 tons or more of general cargo, largely American products. As an example, the *Batavia* had a nearly complete cargo, consisting of 1,276,568 pounds of flour, 5,850 bales (1,417,670 pounds) of domestics, 20 boxes of organs, 5 street-cars, 41 cases of machinery, 10 cases of electric fixtures, 11 cases of school text-books, 13 cases of lamps, 1 case of watches, 8 cases of household goods, 2 hogsheads of crockery, etc., amounting in all to 1,369 tons of American merchandise. They have also brought from the Orient 5,371 Chinese, and

taken away, as far as reported (the exact number not known), 970. The schedule rate for Asiatics between Vancouver and Hong-Kong by this line is $50 in the steerage, and they have been carried at the low price of $40.

The vessels for a time touched at San Francisco on the return voyage, but this practice has been discontinued under an arrangement made between their manager and the Pacific Coast Steam-ship Company of that city. They for a time also touched at this port, and strenuous efforts have been made by the board of trade and others of this city to induce the managers of the line to touch here regularly. These efforts, ineffectual thus far, I have reason to believe will eventually be successful.

These steam-ships now have the benefit, according to a press report which I believe to be correct, of a subsidy from both the Imperial and Dominion Governments, amounting in all to $60,000 per annum.

Various projects of other lines of steam-ships, in connection with the Canadian Pacific Railway, are reported from time to time, but there is at this moment nothing definite.

CHINESE.

The number of this race, formerly so great in the province,—at one time estimated at 19,000 or 20,000—has largely decreased, the present Chinese population, as given from official quarters, being 8,000; nearly one-half of them, I think, are in this city. Their immigration hither has practically ceased. Only 109 arrived at Vancouver from China on the four Orient steamers last arriving. During 1888 and the two last months of 1887 5,371 arrived at Vancouver on the Orient steamers. Probably two-thirds of them held United States customs return certificates, and entered the United States mostly at San Francisco. During the same period, according to the customs return of this city, 640 arrived here in small numbers from various points. There have been no arrivals at any port in the province direct from China save those recorded above. No sailing vessels with any considerable number have arrived since June 21, 1885, when the *Alden Besse*, the *W. H. Besse*, and the *Martha* landed 997, direct from China, in one day.

Although the business of the Chinese firms has, except in opium, greatly decreased, there are, according to the directory for 1888, still some twenty firms given as "opium merchants and importers," "importers and manufacturers, wholesale dry goods and groceries, opium, etc.," and some fifty-five other smaller concerns, such as merchant tailors, jewelers, druggists, butchers, provision dealers, shoe-makers, cigar manufacturers, tea dealers, etc.

Of the laboring classes many find periodical work in the salmon canneries on the mainland, at the lumber-mills, at gardening, etc. Some four or five hundred find employment as domestic servants. Some of them find their way illegally into the United States from time to time, but not now in any considerable number.

The amount reported as received by the customs authorities from Chinese as entry fee, $50 per capita, under the Chinese immigration act, 48–49 Victoria, during the year 1888 is $43,000.

THE INDIANS.

The number and condition of the Indians of the province remain about the same. The last official report gives 37,944, a slight diminution in number from the report of 1887, and about one-fourth of the entire Indian population of the Dominion. There are seven principal agencies and numerous subagencies or reserves, and nine schools. Twelve pounds per capita is allowed to clergy for tuition.

From the Dominion Indian fund, which consists of all moneys which have accrued to the Indians under treaty, as well as from sales of lands surrendered by them to be sold for their benefit, amounting, as per report of 1888, to $3,324,234.62, $66,834.20 was expended for the Indians of this province during 1888. Nineteen thousand of them are under the direct care of the Dominion. I transcribe from the twenty-sixth annual report of the superintendent-general of the Dominion the following statement, given, says the report, "to show the value to the province of the Indian labor, which largely contributed to the results stated," viz: "Proceeds of province during fiscal year—furs, marine, $287,377; furs, other, $299,368; salmon, canned, $601,812; salmon, salted, $13,823; fish oils, $7,322; total, $1,209,702."

As a race they compare well with any Indians in North America, are docile and for the most part industrious. Many of them are agriculturists and stock-raisers, many engaged in hunting the fur-seal, in fishing and in the salmon canneries, and as sailors in the coastwise navigation. About the season of hop gathering in the adjacent American vineyards fleets of canoes, containing entire families from this island and the mainland, are seen paddling into Puget Sound on the way to the vineyards, where they obtain remunerative employment. They in large part still adhere—although forbidden by law and enjoined against earnestly by their Christian teachers—to the old customs of the *tamana* and the *potlatch*, which last is peculiar to the Indians of British Columbia and those allied to them by ties of consanguinity in Alaska. Over the genuine Indian this custom has a stronger grip than that which holds the courtier in the most central Sanhedrim of etiquette to be found in the German monarchy. To pay a *potlatch* debt the remotest relative concerned will sacrifice wife or children.

In dealing with the Indians their inherent title to the soil has never been acknowledged in this province.

ROBERT J. STEVENS,
Consul.

UNITED STATES CONSULATE,
Victoria, B. C., February 22, 1889.

IMPORT TARIFF OF VENEZUELA.

REPORT BY CONSUL BIRD, OF LA GUAYRA.

This tariff, arranged according to form prescribed by the Department of State, was reported from the consulate of the United States at La Guayra, and published in CONSULAR REPORT No. 73½, for January, 1887. In addition to import duties on merchandise, a tax of 12½ per cent. of import duty paid is levied for internal revenue.

The President of Venezuela by decree dated March 28, 1889, published in the Official Gazette of April 6, 1889, has promulgated a new and revised edition of the tariff, in which are incorporated certain amendments, and in changes of classification that, arranged in order prescribed by the Department of State, are as follows:

No.	Tariff of classification.	Class.
3	Tombs and sepulchers	Second.
	Statues, busts, pitchers, vases, etc., of marble, alabaster, granite, or similar stone	Third.
	Toys of all kinds and materials	Do.
7	Lithographs on cartoons	Fifth.
	Albums containing velvet, silk, pearl, Russia leather, gilt or plated	Eighth.
9	Macaroni flour	Third.
	Milk food	Fourth.
	Macaroni, vermicelli, and other soup pastes	Fifth.
10	Bricks	Second.
15	Gum lac, with alcohol, for hats	Fourth.
	Bicarbonate of soda, calcined Persian powder, and cleaning spirit	Fifth.
19	Canvas and sail-cloth, unbleached	Fourth.
	Flannel (white or colored), water-proof cloth, candle wicks	Fifth.
	Cotton merino	Sixth.
	Purses	Seventh.
	Hammocks	Eighth.
22	Canned fish	Fourth.
23	Coarse packing cloth or canvas, coarse nankeen No. 3, coarse unbleached cloth for coffee sacks	Third.
	Coarse packing cloth or canvas, nankeen No. 2, fustian and like cloth, more or less bleached	Fourth.
	Canvas and unbleached sail-cloth	Do.
	Black or blue linen hollands	Fifth.
	Crude linen mosquito netting	Do.
	Purses	Seventh.
	Hammocks	Eighth.
37	Petroleum steam-engines	First.
	Barbed fence wire and staples	Do.
	Wire mattresses	Sixth.
42	Kalsomine earth	Fifth.
45	Oakum	Second.
49	Sienna earth, black earth	Do.
50	Gilt or colored cornucopias for confections	Fourth.
	Colored silk paper	Fifth.
56	Brandy, gin, and all spirits not of cane, up to 22° Cartier	Sixth.
62	Shingles	Second.
	Osiers, unmanufactured	Third.
	Boxes, in pieces	Fourth.
63	Fleeces of sheep-skins	Seventh.

Importation of the following articles is prohibited: Jerked beef, dynamite, cocoa-oil, cotton, cane spirits, starch, indigo, sugar, cocoa, coffee, molasses, honey, match sticks, chewing tobacco, salt, sarsaparilla, counterfeit money, coining apparatus.

WINFIELD S. BIRD,
Consul.

UNITED STATES CONSULATE,
Caracas, April 9, 1889.

FREE-TRADE VERSUS PROTECTION IN HOLLAND.

REPORT BY MINISTER THAYER, OF THE HAGUE.

I have the honor to inclose herewith a copy of an editorial article cut from the Dagblad van Zuidholland en 'S Gravenhage, with a translation of the same, on the subject of "Free-trade." I do not transmit it because of its conspicuous ability as a discussion of that subject, but it has a decided significance from the fact that the free-trade policy has been pursued by this country for a great many years, so that its effect upon commerce and industry here are fairly before the world.

The Dagblad is the oldest paper published at The Hague, and is recognized throughout the country as one of the most influential organs of the Conservative party; hence its utterances upon the subject aforesaid are not without weight. For a long time the Liberals were the dominant party, but a year or two ago the defeat of a measure proposed by the Liberal ministry making necessary the proroguing of the States-General, a new return of members to the second chamber (the branch chosen directly by the people) showed a majority for the Conservatives. In deference to this fact, of course, a Conservative ministry had to be appointed, who are still in power. But the first chamber, chosen by the "states" or legislatures of the several (eleven) provinces (as is our Senate by the legislatures of the several States) was and is, for the greater part, Liberal. The second chamber alone has the right to originate legislation, but no bill can become law without the concurrence of the first chamber; hence, while Conservative measures may not always be certain of adoption, yet important concessions must be made on both sides to carry any bill through. And, therefore, a return to protection in this country, advocated by this Conservative journal, would seem by no means hopeless, at least in modified form.

The editorial in question, as you will perceive, takes for its text, so to speak, a citation from the Kölnische Zeitung, a paper published at Cologne, Germany, and very frequently quoted in dispatches to the Associated Press of the United States. This is intended to exhibit the state of feeling in Germany on the tariff question, and shows that even those in favor of free-trade advocate their principles very feebly just now, because of the satisfactory result

flowing from the protective system. At the close the editorial claims that the same experience obtains in France, Belgium, and Italy, and that Sweden, long a free-trade stronghold, has returned to protection.

SAMUEL R. THAYER,
Minister.

UNITED STATES LEGATION,
The Hague, June 18, 1889.

[Inclosure in Minister Thayer's report.]

A LESSON FROM GERMANY.

(From the Dagblad van Zuidholland en 'S Gravenhage.)

It is well known how many unfavorable prognostications are ventured upon by our free-traders whenever there appears to be the remotest likelihood of a revision of the tariff being made which shall to any degree meet the just requirements of industry. The difficulties are declared to be so great, the unhappy consequences are depicted in such somber colors, that the conclusion always announced is, "We can not think of doing so for a moment."

This exaggeration has always seemed to us like a confession of weakness on the part of free-traders. If they were so firmly convinced of the hapless results of the introduction of a moderate protective system, they would not oppose a trial of it; the "deluded people" would very soon let themselves be heard from, and the misled nation would demand a return to the blessed days of non-protection. The free-traders, however, shrink from a modest experiment in tariff reform, even one which, while within the bounds of constitutional finance, would at least give some satisfaction to just demands. In their own minds they are not quite so sure of the fulfillment of their dark prognostications as they would like the people to be. Indeed, it would not be the first time that the calculations of the worshippers of theory were put to shame by experience.

* * * * * * *

In view of the controversy in the field of political economy which is rife in our land, we consider the following extract from the Kölnische Zeitung to be of special interest:

"There is a department of legislation which formerly was wont to elicit much vehement parliamentary strife, but which, during the session of the Reichstag just closed, occupied very little of its time. This is the tariff question. This would warrant the conclusion that the objections on this ground are constantly losing in force, and that the opponents of the policy of protection have less inclination to be ever tinkering at the existing tariff. The only attempt which was made in this direction was the proposition to take the duties off grain; but it failed completely, whereby it appears that even this phase of the question can not serve any longer to keep up the agitation. The said proposition, proceeding from the Social Democrats and German Liberals, had its first reading at a poorly attended session, and the discussion was very feeble. A motion to refer it to a committee was rejected, and the final vote on the question was not reached. Had such a vote been taken it would have been adverse by a large majority. Even those National Liberals who at first voted against duties on grain declared that they did not wish to interfere with an impost which had been laid so recently. And while the free-traders manifested thus great self-restraint the Government and the protectionist majority on their part opposed every attempt to increase certain duties. Several addresses having such increase in view were adjudged by the committee on petitions improper for the consideration of the Reichstag. With reference to these addresses the order of the day was taken up. In an addendum to the German-Swiss treaty of commerce such important reductions in the tariff were made. It will thus be seen that there exists a decided quietness, a weakening of opposition, and a desire for rest on the tariff question."

Thus far the Cologne paper. Its observations comprise invaluable hints. In the first place let us consider the maintenance of the duties on grain, even under the pressure of the un-

favorable harvest of 1888. Let there once come a year of poor harvests — thus declaimed the opponents of grain duties — then it would appear what a reckless thing had been done.

What, however, was the fact? The price of bread did not rise, or, at least, but a very little. The disastrous consequences of the grain duties failed to appear. Experience, as we expressed ourselves on a former occasion, furnished testimony quite different from that of theory. Far from evil results, the introduction of protection duties in Germany produced everywhere greater activity in industrial pursuits, and even agricultural interests did not suffer. The pretext that only the owners of land would be benefited lost its significance and force; only the socialistic and radical agitators, who hesitate at nothing, dare still bring it forward.

No wonder, then, that the liberal, economical opposition began to adopt a passive policy. Although Germany is specially noted for its speculative thinking, because metaphysics flourish there, the German nation is nevertheless eminently practical at heart. What a figure, therefore, would the free-traders cut in the eyes of the people if they should antagonize a tariff which has become so evidently profitable both to the individual citizen and to the national treasury? With the very wise motto, "We desire to watch the effects of tariff revision a little longer," the matter was allowed to rest.

Such a position gives evidence at least of a practical and intelligent sentiment, which, perhaps, we would not find quite so general among the Dutch free-traders. For we do not deem it impossible, even though the event should prove their error, that our free-traders will continue to speak and write about the glories of a tariff which enables a small nation to give a noble example of its attachment to the eternal principles of liberty, even in the field of commerce.

* * * * * * *

If the industry and agriculture of the Netherlands could be made to prosper by means of the speeches of Liberals they would be the most fortunate and flourishing in the world. That, however, can, alas, not be, and therefore we ask the Government and the majority of the people's representatives: "Revise the tariff in accordance with more protective ideas."

With an eye to events in Germany, we add: "Be not deterred therefrom by the opposition. Terrible pictures of the effects of a tariff revision in our sense will be placed before you by the free-traders with a plausible appeal to material interests and patriotism; you will be pointed to the danger of reprisals on the part of other powers. According to them the worst may be expected should the Netherlands dare to abandon a policy which has brought her no prosperity."

* * * * * * *

The lesson taught by Germany could be supported by those taught equally by France, Belgium, Italy, and other states. We will refrain from adducing these, however. The facts in Germany speak loudly and forcibly enough. We merely wish to assert this, that the jeremiads of free-traders are nowhere justified by experience. The protectionist tendency is everywhere gaining force. In Sweden, for a long time one of the strongholds of free-trade, protection has now triumphed. King Oscar, personally in favor of free-trade, has finally given way. Everywhere, therefore, does protection prove victorious. Only in this country does free-trade still manage to maintain itself. Pretty soon we shall stand alone with our impracticable tariff.

Perhaps the free-traders will say: "In our isolation is our strength." But the statesman who uttered these remarkable words would never have made them in relation to material interests. An isolation which brings with it the enfeebling of our national resources would never have been advocated by Doctor Groen von Prinsterer.

The experiment of a wise protection should be tried. International difficulties need not be apprehended, and national benefits may certainly be expected. A voice from Germany calls to us: "Why hesitate — you have a right to further your own interests?" Shall this voice be heeded? We trust so. The Mackay ministry, misunderstood and obstructed by partisans, would accomplish a work of true national importance if they would satisfy this national desire.

ITALIAN SILK TRADE, 1888–'89.

REPORT BY CONSUL CROUCH, OF MILAN.

REVIEW OF THE MARKET.

At the beginning of June, 1888, when all indications seemed to point to an unusually large crop, the price of classical greges 10-12, which in May had sold at 41 lire, had fallen to 39 lire; but as the month passed and complaints of failure of the worms at the critical period, the ascent to the wood, became general, and at the same time telegraphic news from Asia indicated a serious deficiency in the crop, especially in China, there was a sudden change, and at the end of June the same article had advanced to 43 lire. The same causes, together with the known activity of the manufacturers and an increased demand from the United States, continued to advance the price to 45 lire at the end of July. During August the prices remained firm, weakening at the end of the month in consequence of the limited demand, and selling in many instances for 44 lire. September was a period of calm, with weakening on the part of the sellers, and finished with a loss of 2 lire on the August prices. October continued the direction of September, and with but slight demand classical raws 10-12 were selling at the end of the month at about 41 lire. Considering that the total crop, including Asia, showed a decided deficiency compared with that of the previous year, what the price of cocoons had been, and that there had been a great activity in manufacturing, these low prices seemed abnormal and unreasonable. In fact, these considerations led to a considerable amount of quiet speculation, which brought about at the end of October a rise of 2 lire on the lowest quotations. This did not continue, but the market soon fell off, and at the end of November the same article was quoted at 42 lire. December commenced with a further fall of prices, and at the middle of the month greges (classical 10-12) were selling at 40 lire, with every prospect of falling still lower. Here, however, there was a sudden change in the aspect of the silk trade, for here a powerful syndicate stepped in. The syndicate which operated so skillfully and successfully in 1885–'86, and so unskillfully and ill-advisedly in 1887, seems to have been more than satisfied with their last venture, and to have retired for the present. The new syndicate was composed of entirely different elements, and operated with French and English capital. The house of Veuve Guerin et Fils was the leader in the operations, and the English capital was used mainly in Asia. On the 14th of December this association commenced operations simultaneously at Milan, Turin, Lyons, Marseilles, London, Canton, Yokohama, and many other smaller markets, and in a few days had obtained possession of an immense amount of silk and cocoons. After the excitement of the days during which silks had advanced 6 to 8 francs and cocoons 2 francs, the interest subsided somewhat, and prices remained stationary until the end of the month. January, however, brought another change. Confidence returned to the buyers,

and seemed gradually to desert the sellers. It was again proven how little power of resistance the Italian sellers possess. During the month affairs moved calmly. The amount of business was, in comparison with December, not large, and the sellers gradually yielded. At the end of the month raws, which Italian spinners had been ready to dispose of at 40 francs in the beginning of June, and for which, in the latter half of December, 50 francs seemed to them not enough, could now be had at 46 francs. It was evident that as long as the syndicate did not intervene the Italian spinners lacked the ability to profit by their advantageous position, and this was probably the reason of the unsuccessful issue of a promising speculation. The remainder of the season was uneventful. As the time of the new crop approached transactions became limited, and all were awaiting the result. When it seemed probable that the harvest would be a good one prices weakened slightly and classical greges, 10-12, were to be had for 45 lire. With the constantly increasing note of complaint they again strengthened, and, when it became evident that there was a marked falling off in the crop, prices advanced decidedly.

The export of raw silk to the United States from this consulate during the fiscal year ended June 30, 1889, compared with the two previous years, has been as follows:

Export of raw silk from Milan to the United States.

Months.	1886–'87.	1887–'88.	1888–'89.
	Bales.	*Bales.*	*Bales.*
July	207	228	294
August	397	365	447
September	416	423	541
October	563	437	589
November	483	243	422
December	427	270	586
January	190	276	212
February	163	387	303
March	287	438	376
April	519	407	328
May	500	424	260
June	269	474	266
Total	4,421	4,172	4,624

The total value of the exports was as follows: For 1886–'87, $4,618,171.06; 1887–'88, $4,088,938.59; 1888–'89, $4,239,619.91.

THE HARVEST OF 1888.

The spring, although late, was fine, the mulberry leaves abundant and of an excellent quality, the amount of "seed" incubated large, and everything seemed to indicate an unusually large crop. At the critical period, however, that of the "ascent to the wood," there intervened a period of intense heat, followed by severe thunder-storms, which had an unfavorable effect on the development of the worms and gave rise to many complaints of flaccidity. Likewise, in some instances, the disease called *calcino* manifested itself. The

silk-growers whose worms were affected were naturally loud in their complaints; those whose harvest proceeded favorably kept quiet in the hopes of profiting by the higher price which the expectation of a partial failure in the crop would bring about. These are old tactics, but frequently successful, and this was the case last year. It was at first believed that the harvest was at least 20 per cent. inferior to that of the previous year. As a matter of fact, the harvest was really almost, if not quite, equal to that of 1887, the largest on record. The following tables will give a good idea of the result of the crop from various points of view. The data in reference to seed will especially interest sericulturists in America, and may be of assistance in the selection of the same for use at home.

Harvest of 1888.

Species.	Seed incubated.	Yield in cocoons.		Price per kilogram.	Total value.	Yield of cocoons in silk.	Amount of cocoons necessary for 1 kilogram of silk.
		Total yield.	Per ounce of seed.				
Greens:	*Ounces.*	*Kilos.*	*Kilos.*	*Lire.*	*Lire.*	*Kilos.*	*Kilos.*
Japan origin	112,500	3,500,000	31.02	2.85	9,975,000	257,353	13.60
Reproduced	453,500	14,000,000	30.87	3.20	44,800,000	1,176,470	11.90
Native yellows	754,000	25,500,000	33.82	3.35	85,425,000	2,297,297	11.10
Total	1,320,000	43,000,000			144,200,000	3,731,120	

NOTE.—1 kilogram = 2.205 pounds; 1 lira = 19.3 cents.

Harvests since 1879.

Year.	Seed incubated.	Yield in cocoons.		Price per kilogram.	Total value.	Yield in silk.	Cocoons per kilogram of silk.
		Total yield.	Per ounce of seed.				
	Ounces.	*Kilos.*	*Kilos.*	*Lire.*	*Lire.*	*Kilos.*	*Kilos.*
1879	1,600,000	18,526,446	11.57	5.70	105,600,742	1,329,013	13.94
1880	1,719,390	41,674,109	24.24	4.00	166,696,436	2,847,478	14.60
1881	1,592,910	39,837,661	25.01	3.90	155,366,878	3,052,784	12.96
1882	1,336,452	31,628,112	23.66	4.43	140,330,338	2,581,677	12.33
1883	1,456,137	42,224,039	29.06	3.63	153,243,236	3,308,847	12.58
1884	1,424,595	36,816,965	25.84	3.81	140,204,385	2,868,974	12.71
1885	1,233,036	32,266,017	26.17	3.12	100,803,233	2,729,781	11.82
1886	1,246,614	41,397,323	33.21	3.69	152,936,157	3,113,299	12.12
1887	1,323,725	43,025,783	32.50	3.75	161,331,789	3,756,166	11.72
1888	1,320,000	43,000,000	32.57	3.26	140,200,000	3,731,120	11.52

Cost of seed per ounce.

Species.	Cost of production.	Selling price.
	Lire.	*Lire.*
Japan originals per card (imported)	5.00 to 7.50	10 to 12
Japans reproduced	3.00 3.50	6 7
Crossed white-yellow	3.50 4.00	7 8
Native yellow	3.25 3.75	7 8
Selected of all kinds	5.50 6.00	11 13

SEED RAISING.

The seed imported from Japan has become of comparatively small importance, the greater part of the seed employed being now raised in Italy, especially in Tuscany and the Romagna. The most noted establishments are at Ascoli-Piceno, Montepulciano, and Ancona, and by the most careful selective breeding, with constant employment of the microscope, seed have been obtained hardier and freer than ever before from disease, and yielding a larger amount of silk per ounce, as is apparent from the tables. The seed or eggs deposited during the summer are now usually sent during the months of January and February to mountainous regions, such as Generoso, Oropa, and the Alps, where they are kept at a constant temperature varying from 4° below to 4° above the freezing point, until the time arrives in the spring for incubation. This process, which is called hibernation, is supposed to harden them and render them more resistant against disease. Of the various races the native yellows yield the largest amount of silk, but at the same time more affected by the weather and subject to flaccidity, *calcino*, and other diseases, and consequently more liable to fail entirely. A species as yet not extensively used, but which is being urged upon the sericulturists by experts, is a Chinese species from the province of Che-Kiang,* with small, white, rounded cocoons of a fine quality of thread. It is claimed that 8.50 kilograms of these cocoons yield a kilogram of silk; that the time from incubation to spinning is three days less than that of the Japanese; that an ounce of seed requires only 900 kilograms of mulberry leaves, producing 40 to 50 kilograms of cocoons, as compared with the native yellows, which require per ounce 1,300 kilograms of mulberry leaves, producing 60 to 70 kilograms of cocoons; and that they are worth 25 to 50 centimes per kilogram more than the native yellows; and that the number of doubles is less.

The cost of cocoons per kilogram, as determined by the six standard markets, was as follows:

Markets.	Japans.	Crossed yellow-white.	Native yellows.
	Lire.	*Lire.*	*Lire.*
Alessandria	2.6570	2.7394	3.2070
Novara	2.6380	2.6737	3.1300
Voghera	2.3700	2.6557	3.1090
Brescia	2.6040	2.6276	3.0760
Lodi	2.4900	2.4800	2.9800
Mantua	2.3880	2.3950	2.7270
Average	2.5245	2.5952	3.0381

*See inclosure to report immediately following, on the "Silk Trade in China."

In previous years the average per kilogram was as follows:

Year.	Japans.	Crossed yellow-white.	Native yellows.
	Lire.	*Lire.*	*Lire.*
1876	4.4976	.....	.....
1877	4.4001	.....	.....
1878	4.0408	.....	.....
1879	5.1990	.....	6.3060
1880	3.6410	.....	3.9880
1881	3.4870	.....	4.0320
1882	3.9050	.....	4.6050
1883	3.1820	3.6930	3.9870
1884	3.3630	3.6900	3.9400
1885	2.3390	2.5050	2.9420
1886	2.9403	3.1294	3.6019
1887	2.9380	3.1630	3.5580
1888	2.5245	2.5952	3.0381

THE WORLD'S YIELD OF SILK.

During the past year Asiatic competition has been less than was feared. This, however, was mainly due to the failure of the Canton crop. The Japan crop, which for some time was believed to be a failure, or at least largely reduced, turned out to be slightly larger than that of the previous year. The following estimate of the world's yield in 1888, compiled by the Syndicate of Silk Merchants of Lyons, whose statistics are considered very reliable, will give an idea of the present condition of silk growing:

Country.	1886.	1887.	1888.
	Kilograms.	*Kilograms.*	*Kilograms.*
Italy	3,188,000	3,476,000	3,566,000
France	677,000	717,000	798,000
Austria	217,000	264,000	307,000
Spain	52,000	78,000	83,000
Brusa and Anatolia	206,000	188,000	170,000
Greece (Salonica)	145,000	155,000	138,000
Caucasus	93,000	55,000	50,000
Syria	233,000	340,000	231,000
China { Shanghai	2,387,000	2,459,000	2,256,000
China { Canton	1,357,000	1,411,000	695,000
Japan	1,478,000	2,217,000	2,400,000
India	781,000	791,000	1,011,000
Total	10,814,000	12,151,000	11,705,000

COST OF SILK PRODUCTION.

It is estimated that the cost of production of 1 kilogram of raw silk was from 42 to 45 Italian lire. This result is arrived at by the following interesting calculation. The average amount of raw silk (classical 10-12) which a girl spins with a machine and with an assistant to brush, in a working day of twelve hours, is as follows:

	Grams.
Japanese green cocoons	275 to 325
Crossed yellow-whites	350 400
Native yellows	375 425

Say, on an average, that it takes a girl two and three-quarters days to spin a kilogram of silk:

	Lire.
Wages of spinner, two and three-quarters days, at 1 lire per day	2.75
Wages of brusher, one and one-quarter days, at 60 centimes per day	.75
Expenses of receiving, killing, preserving, storing, etc., 12 kilograms of cocoons	.75
Fuel and daily expense of machine, two and three-quarters days, at 40 centimes per day	.95
Rent of rooms and machine, at 25 centimes per day	.70
Direction and assistance, at 9 centimes per day	.25
Interest on 40 lire at 5 per cent. per annum for six months, from buying cocoons to selling silk, etc	1.00
Cocoons lost and destroyed in handling, 12 cocoons to the kilogram	.35
Taxes, insurance, wear of machinery, and miscellaneous expenses	.50
Total cost of spinning 1 kilogram of raw silk	8.00

From this is to be subtracted the value of the waste silk produced—0.24 kilograms at 8.50 lire per kilogram = 2 lire—and for doubles, pierced cocoons, etc.—likewise 2 lire—which would reduce the cost of spinning to an average of 4 lire, varying in accordance with the species of cocoons employed. The total cost of production would be then in accordance with the following table:

Species.	Cocoons used per kilogram of silk.	Price of cocoons.	Cost of cocoons per kilogram of silk.	Cost of spinning.	Total cost per kilogram.
	Kilograms.	*Lire.*	*Lire.*	*Lire.*	*Lire.*
Japan greens	13.75	3.00	41.25	4.30	45.55
Crossed yellow-whites	12.00	3.25	39.00	4.00	43.00
Native yellows	11.75	3.45	38.80	3.70	42.50

During past years the cost of production, calculated in this manner, was as follows:

Year.	Japan greens.	Crossed yellow-whites.	Native yellows.
	Lire.	*Lire.*	*Lire.*
1879	74.00	.....	72.00
1880	64.00	.....	62.00
1881	52.00	.....	50.00
1882	56.00	.....	54.50
1883	50.00	48.00	47.50
1884	51.00	49.00	49.50
1885	42.00	40.00	41.00
1886	50.25	49.75	49.00
1887	50.00	48.50	47.50
1888	45.50	43.00	42.50

THE ATTACABARA, OR ATTACHING MACHINE.

During the past few months a new machine has been perfected and introduced, which is considered to mark a distinct advance in silk spinning. It is the so-called *attacabara*, or thread attacher, an automatic device for attaching the thread from the cocoon to those which are already being twisted together and reeled. It is calculated that with this apparatus the reeler can increase her work 20 to 25 per cent., with less trouble and increased precision.

RELATIONS WITH FRANCE.

One point remaining to be commented on is the war of tariffs in which Italy and France have been engaged since March, 1888. The exact effect is difficult to determine. That both the Italian producers and the French consumers suffer is without doubt, and probably the Italian producer suffers the most. On the other hand, it is apparent that the French manufacturers can not get along without the Italian silks. One result has, of course, been to increase the exportation to Germany and Switzerland. The heavy exportation to the United States in the September and December quarters was probably not without connection with the increased difficulty of exportation to France; but, on the other hand, the exportation for the March and June quarters this year shows a falling off from the figures of last year. The French have shown an unwillingness to deal directly with the Italians. This may have been patriotism, or it may have been the result of calculation. Certainly the exceptionally low quotations of last June can not have been entirely independent of this state of affairs, as some Italians would have us believe. On the other hand, Italian greges and ouvrès certainly found their way in large quantities to Lyons, as the statistics of the Lyons conditioning warehouses show. Thus, of the total amount of 4,817,587 kilograms conditioned in Lyons in 1887, 984,527 kilograms were Italians, that is, 20 per cent. In 1888, the total was 5,183,520 kilograms, of which 1,089,863, or 21 per cent., were Italians. Examining the statistics more closely, it appears that in 1887 the amount was made up as follows: Organzines, 385,306 kilograms; trams, 123,213 kilograms; raws, 476,008 kilograms; total, 984,527 kilograms. In 1888: Organzines, 375,869 kilograms; trams, 102,952 kilograms; raws, 611,042 kilograms; total, 1,089,863 kilograms. Thus thrown silks have suffered, although not severely. The main sufferers are Italian thrown silks of Asiatic origin. Entering France from Italy, they pay the same duty of 2 francs per kilogram as the native Italian silks. Under such conditions competition with the French throwsters in Asiatics is rendered exceedingly difficult.

ASIATIC COMPETITION.

As to Asiatic competition, which, before the issue of last year's crop was known, was regarded by many Italians with most pessimistic forebodings, the exaggerated fears seem to have disappeared for the present. Certainly the quotations of Asiatics for the last twelve months have shown greater steadi-

ness than the Italians. Comparing raws 9-10 with tsatlees 4½, the prices in January of the last five years have been as follows:

Year.	Raws 9-10.	Tsatlees.	Difference.
	Francs.	*Francs.*	*Francs.*
1885	53	56	17
1886	56	38	18
1887	58	41	17
1888	52	35	17
1889	47	39	8
Average	53.20	37.80	

Thus it appears that while tsatlees, in January, 1889, were selling at 1.20 francs above the average of the last five years Italians sold at 6.20 francs below the average.

THE CROPS OF 1889.

The harvest of this year is about finished, and the result is known to be from 25 to 30 per cent. inferior to that of last year. In a few weeks it will be possible to get figures approximately correct, and I shall take occasion to report the same. Owing to the deficiency in the crop the prices have advanced sharply in the last few weeks, as has already been noticed. At present prices are firm.

HENRY C. CROUCH,
Consul.

UNITED STATES CONSULATE,
Milan, July 10, 1889.

SILK TRADE IN CHINA.

REPORT BY CONSUL-GENERAL KENNEDY, OF SHANGHAI.

As the silk industry in the United States is a growing one, it has occurred to me that the following statistics of the silk trade in China may prove interesting. The figures are compiled from a very well digested and reliable report of the statistical secretary of the imperial maritime customs at Shanghai, under orders from the inspector-general, Sir Robert Hart, who directed it made in accordance with a request of the vice-president of the Lyons chamber of commerce for use in connection with a display of silk goods at the Paris Exposition. The statistical secretary, E. McKean, esq., has kindly furnished me his report, which bears the impress of ability and care.

The export of raw silk has varied in the last ten years between 51,772 piculs (1 picul = 133⅓ pounds) in 1885, the lowest year, and 80,170 piculs in 1880, the highest year, the average being about 65,000 piculs. The export last year was about 1,000 piculs below the average.

Silk waste has also developed astonishingly. From an export of only 14,533 piculs in 1879 it reached 59,125 in 1887, with fluctuations.

There has been quite a business in silk cocoons, which, from the care with which they are prepared in ports of China, seems to make them very much sought after by other silk manufacturing countries. In 1879 the trade in them amounted to 4,318 piculs. It fell to 1,324 piculs in 1885, then to 11,092 piculs in 1887, and 8,981 piculs in 1888.

The report shows that in silk piece goods the export has gradually but steadily risen from 13,808 piculs in 1872 to 23,016 piculs in 1888.

I append to this report a memorandum, compiled by Mr. McKean's request, on "Che-Kiang and Kiang-Su Silk," by Claude A. Rees, esq., of Shanghai, whose long experience and recognized ability as a silk expert makes it a valuable contribution.

A reference to the map of China will show that Ning-Po is the capital city of Che-Kiang, which lies south of Kiang-Su province, while Shanghai is the great commercial city of the latter.

In connection with the silk industry of this province, so much of the report I had the honor to make on "Kiang-Su Province," in my No. 180 of February 2, 1888, as bears on the same can be read as showing the area of the province devoted to the culture of the mulberry tree, and the method of propagating the worm.*

J. D. KENNEDY,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Shanghai, June 20, 1889.

[Inclosure in Consul-General Kennedy's report.]

CHE-KIANG AND KIANG-SU SILK.

(Memorandum by Mr. Claude A. Rees, of Messrs. Gilmour & Co., of Shanghai.)

The greatest silk-producing province in China is Che-Kiang, and Kiang-Su comes second. Statistics as to Chinese consumption are impossible to obtain, even in these two, the best known provinces, and when Anhwei, Szechwan, and the northern departments have further to be considered, the question as to the total production of silk in China becomes practically unanswerable, the only vague opinion that natives can give being that their consumption takes more than double the quantity that is exported to foreign countries.

The two great divisions in silk, as exported from central China, are known in all consuming places as "tsatlees" and "taysaams."

"Tsatlee" is simply the Cantonese for "tseih le," or 7 li; that is to say, an area of that dimension, taking Nanzing as the center, where, at any rate in old times, the best fine-sized silk was produced. The radius has been extended (in consequence of the higher prices paid for fine compared with coarse sorts), and tsatlees now include some silks reeled from Sinsze and Seloo cocoons, which formerly were only employed for silks of the coarser thread; considerable quantities of taysaams still, however, being reeled in these two last-named districts. At the present moment tsatlee means silk produced at Nanzing, Chinza, Linglooh, Shwangling, Woochin, Leensze, Hoochow, and a portion of Sinsze and Seloo, besides the intermediate towns, all situated in Che-Kiang.

"Taysaam," being interpreted "a big worm" (an appellation we could never find verified by facts, *i. e.*, as to the larger size of the worm or cocoon), has really only the signification of

*See CONSULAR REPORTS No. 93, May, 1888, pp. 277–280, vol. 26.

silks of a coarse reeling, and under the denomination are classed silks from Kiahsing, Sinsze, Dongse, Shaouhing, Woosieh, and Laeyang, the last two districts being situate in Kiang-Su.

A few smaller divisions of the article deserve mention:

(1) Haining, or Yuenfa, situated in Che-Kiang, produces silk reeled of the finest size known in China, and when native consumption was crippled by the Tai-Ping rebellion large quantities yearly found a ready sale in Europe. Of late years, however, the export has dwindled down to almost nothing, as natives pay more for the silk for their own purposes than foreigners think it worth. Some of it, however, is still made into rereels (which are principally exported to America), and to which allusion is made further on.

(2) Hang-Chow, also in Che-Kiang, produces both fine and coarse sized silks, tsatlees, and taysaams, the size of the former from this district very nearly approaching to that of Kiahsing taysaams, and they are generally in favor both for export and home use, whilst the coarse sorts are mostly taken by Chinese.

(3) Shaouhing (Che-Kiang) produces a very considerable quantity of silk that, when reeled on foreign methods, is equal to any in the Empire, but which, as natives persist in reeling on a large wheel, and without care, has gradually lost all interest to foreigners.

(4) Laehang (Kiang-Su) must produce from 3,000 to 4,000 bales annually, but the same remarks as those applied to Shaouhings also apply to this district's production.

The principal towns where throwing is carried on are Nanking, Soo-Chow, and Hang-Chow; and the business must be large to meet the enormous piece-goods trade of China. Formerly foreigners used to export considerable quantities both of trams and organzines, but the improvements made in Europe, which have not extended to China, have extinguished the trade.

The re-reeling of silks (for the purpose of rendering the manipulation of the silk easier to manufacturers) is carried on in the centers of Nanzing and Chinza and the outlying farms or hamlets. The production is considerable, and would be larger if the Chinese would use greater care and abstain from adulterating the silk during the process.

TURKISH RAW SILK HARVEST OF 1889.

REPORT BY CONSUL BISSINGER, OF BEIRUT.

Reverting to a recent report (published in CONSULAR REPORTS No. 104), and pertinent to the same subject, Syrian silk, I have the honor to inform the Department that I have thus early secured enough information to enable me to state that indications from all silk producing districts within the Turkish Empire point to a most satisfactory crop for 1889, estimated to be at least one-third larger in volume than the harvest of 1888. The cocoons are of a superior quality, and the present condition of both the silk markets in Europe and the ruling prices for cocoons here promise a most successful season for sericulture.

SILK REELING MACHINES.

In this connection it may not prove devoid of interest and value to note the introduction and practical application of foreign inventions in the Ottoman Empire. The initiative in this progress in the industries of the country is directly traceable to American enterprise and energy, and is an innovation in the form of silk reeling machines, invented by Mr. E. W. Serrell, jr., a citizen of the United States, at present residing in Chabeuil, France. These machines, for which it is claimed that they simplify and perfect the process of reeling the raw silk, are said to be protected in Turkey by no less than five

distinct imperial firmans, and an enterprising firm in Constantinople is now actively engaged in the manufacture of the same.

A Government inspector has lately been delegated to visit and examine these interesting inventions, which, by reason of the many advantages they promise, hold out the prospect of a revival of the silk industry of this country, a source of wealth capable of the greatest development.

The invention is the exclusive property of the Serrell Automatic Silk Reeling Company (limited), and I am credibly informed that arrangements are now being completed for its speedy introduction into Beirut, Brusa, and other important centers of silk industry.

ERHARD BISSINGER,

UNITED STATES CONSULATE, *Consul.*

Beirut, July 1, 1889.

THE RAILROADS AND HARBORS OF JAVA.

REPORT BY VICE-CONSUL WOOD, OF BATAVIA.

RAILWAYS.

The system of railways in Netherlands India dates from the year 1862, when a concession was given by the governor-general to the Netherlands India Railway Company to build a road from Samarang to the independent states of Djokjokarta and Sourakarta, with a branch line to Cembarawa or Fort Willem I, which was completed in 1873. Two years previously, in 1871, the Government began preparations for constructing a line westward from Djokjokarta through Karang, Anjar, and Maos to Tjilatjap, which was not, however, opened for traffic until 1887; and from Djokjokarta eastward to Pasarouan via Sourabaya, with branches to Blitar, Malang, and Probolingo, which are also now in operation. On the Government lines the cost of construction has been, on an average, about 69,294 florins per kilometer, or 111,560 florins per mile.

On the west of the island concessions were given, in 1865, to the same company for making a road from Batavia to Buitenzorg, and, in 1871, the Government took measures for the continuation of the railway to Bandong in the Preanger residency. This has been completed and, moreover, continued beyond to Garoet with the intent to make a junction with the Djokjokarta line to Tjilatjap, the only port on the south coast of Java. It is understood that this railway will be open for traffic within three years, though the prosecution of the work through the mountainous country in this part of the island necessitates much labor and expense in bridging, excavating, grading, and tunneling; Bandang and Garoet, for instance, lying at an altitude of over 3,000 feet above the sea. A branch line from Batavia to Bekassi has lately been completed, and a short road to Tangerang is proposed, while a railway from Tagal to Margosari is also open beyond Banjaran. The cost of construction has therefore been, on an average, about 99,452 florins per kilometer, or 160,000 florins per mile.

Since 1875 the average annual expenditure on government railways and the new harbor works at Tandjong Priok has been between 7,000,000 and 8,000,000 florins, not less than 80,000,000 florins having been paid during the decade following for this object alone. As regards the returns to the Government from these roads, it may be said that, until 1877, the only lines open for traffic were the private railways between Batavia and Buitenzorg, of 30 miles, and the Samarang, Djokjokarta, and Cembarawa lines, of 126 miles. The company contracted to return to the Government the advances received during their construction, and to add thereto a share of the net profits. The amount thus paid increased gradually from 57,000 florins in 1871 to 1,015,000 florins in 1876, which sums have been paid over to the Goverment in Holland, through the corporation's agents there, while it has also declared an annual dividend of about 8 per cent. during the past ten years for the benefit of its stockholders. The rolling stock on all of the lines is of small pattern, but built in durable though very simple style.

In Sumatra a line has been built by a private company to connect the several Deli tobacco plantations, and a branch is now being laid to Babougan. At Padang the Government has built a part of the line to Moera Kalabang for a distance of 34 miles to the base of the mountains, and is at present undertaking the most difficult portion, a three-railed track—such as is in use in Switzerland—being now necessary to reach the highlands. A thorough survey has been made of this region by a Government engineer, who has published a large work upon the mineral deposits in this region, in which he declares that there are extensive beds of coal of the best quality here, which lie near the surface of the land and may therefore be easily worked. It is expected, consequently, that the opening of this line will be attended by a great increase in the supply and by a cheapness of this article, which is now obtained at considerable expense from Australia, Japan, and England.

At the military station, at the northern point of Sumatra, there is an excellent steam tram-way in operation, similar to the lines in Sourabaya and Batavia. At the last-mentioned place the track is about 7 miles in length, and extends through the principal streets of the city from the harbor to the suburbs, the tracks being double for the greater part of the distance. The locomotives are from the German works at Düsseldorf. They are provided with steam at the termini from stationary boilers. The steam enters the boilers at 200 pounds' pressure, and this supply proves sufficient for maintaining, with a train of four tram-cars, an average speed of 10 miles an hour, with stops at stations about half a kilometer apart. A dividend of 6 per cent. is declared annually. Details showing the actual condition of the roads will be found annexed. The net receipts for 1886–'87, from all lines, were 4,822,200 and 4,448,300 florins, respectively.

HARBORS.

It has been noted above that an expense for harbor works at Tandjong Priok was included in the total of expenditures for transportation and shipping facilities. This is due to the absence of natural harbors in this vicinity,

which has induced the Government to supply this deficiency by building one of the most important works of the kind in the East, at a cost of 20,000,000 florins. In 1875 work was accordingly begun on the harbor at about 6 miles to the south of Batavia, the constructions consisting of jetties extending seaward and inclosing a sheet of water amply sufficient to accommodate a large fleet of vessels. This inclosure was then deepened in order to admit all vessels capable of passing through the Suez Canal, and at the land end a large wharf was built, with room and moorings sufficient for the requirements of the usual amount of shipping entering at Batavia, with four warehouses, hoisting apparatus, buildings and offices of the customs officials, and a railway and canal connecting with the roads and water-courses at Batavia. In 1882 the work was so far advanced that advantage could be taken by vessels of the facilities thus offered, though it was not until 1887 that the harbor was officially opened, when the custom-house and master-intendant's office were moved there. While it was in process of construction the port proved to be very unhealthy, but since the work has ceased the customs officials report a great improvement in this respect, and that the place is now quite as healthy as Batavia itself.

Up to the present date there have been no special rules or duties at this point, and therefore no revenues; but a proposition has now been submitted by the authorities to the chamber of commerce here to make certain charges for pilotage and wharfage. For the former service vessels of a capacity from 2,500 to 3,500 cubic meters must pay 15 florins, while for every 1,000 cubic meters above this figure 5 florins additional will be collected. Men-of-war are to be exempt from this toll if the harbor-master has issued a permit for them to enter or leave the port without a pilot, and other vessels, on receipt of a similar order, will be charged half of the pilotage only. For night service double rates must be paid, but no expense in this respect when shifting anchorage in the harbor itself. The tariff for wharfage is to be regulated in proportion to the length of the craft in meters. For vessels between 40 and 50 meters in length the dues will amount to 20 florins per day, while for every 10 meters above this measurement an additional payment of 2½ florins must be made. It is recommended that these dues for sailing vessels be diminished in consideration of their yielding their places at the pier to steamers which may enter to discharge a cargo. Sailing vessels laden with coal often discharge at the wharf, but many of them, together with those laden with other cargoes, prefer to employ lighters and lie at anchorage. Inasmuch as the special petroleum store-houses are at Batavia, and not at Tandjong Priok, vessels with this oil usually lie in the Batavia Roads and discharge their cargo, though it is probable many will undoubtedly prefer the sheltered harbor during the west monsoon, and send the lighters through the canal to the city. A charge is also proposed for the artesian well water supplied to vessels in the harbor.

Since the removal of the Government iron dock from the island of Ourest to Sourabaya the only dock now remaining in this vicinity is a small con-

struction on Amsterdam Island, of about 200 feet in length and capable of receiving vessels of about 2,000 tons. Application has therefore been made to the authorities for a concession to build a dock for vessels of 3,000 tons in the part of the harbor set aside for this purpose, the estimated cost being 1,500,000 florins. The Government works and repair shops for the railways are also at Tandjong Priok, and here, as at similar establishments at Sourabaya, repairs to vessels may be effected.

Comparison of receipts and expenses of Java railways.

Lines.	Lines open Dec. 31.	Mean mileage worked.	Number of passengers.				
			First-class.	Second-class.	Third-class.	Total.	Per kilometer.
Private lines.							
Samarang-Djokjokarta:	*Kilom.*	*Kilom.*					
1883	203	203	6,494	31,637	917,310	955,441	4,706
1884	203	203	6,362	35,454	1,004,056	1,045,872	5,152
1885	203	203	6,052	33,769	993,561	1,033,382	5,091
Batavia-Buitenzorg:							
1883	58	58	20,900	150,748	842,014	1,013,662	17,477
1884	58	58	18,313	96,481	652,580	767,974	13,241
1885	58	58	18,085	86,082	563,520	6.7,687	11,512
Government lines.							
Eastern:							
1883	337	312	5,687	51,789	1,467,985	1,525,461	4,890
1884	481	434	15,481	81,459	1,644,977	1,741,917	4,013
1885	481	481	14,061	82,873	1,573,529	1,670,464	3,475
Western:							
1883	96	82	1,129	7,432	256,195	264,756	3,126
1884	182	141	1,543	9,132	255,221	265,896	1,882
1885	191	184	1,306	9,496	241,560	252,452	1,386

Lines.	Goods transported.	Receipts.			Gross receipts.	
		Passenger.	Freight.	Miscellaneous.	Total.	Per kilometer.
Private lines.						
Samarang-Djokjokarta:	*Kilograms.*	*Florins.*	*Florins.*	*Florins.*	*Florins.*	*Florins.*
1883	274,551,000	514,282	2,497,657	106,010	3,117,949	15,359
1884	292,451,000	567,083	2,473,738	104,162	3,144,983	15,493
1885	404,717,000	558,421	2,206,447	95,718	2,860,586	14,091
Batavia-Buitenzorg:						
1883	84,510,000	391,922	312,155	34,029	738,107	12,725
1884	87,361,000	352,095	362,024	37,443	751,562	12,957
1885	61,538,000	327,147	314,348	35,075	676,570	11,665
Government lines.						
Eastern:						
1883	173,159,000	1,113,281	1,295,371	100,389	2,509,042	8,048
1884	234,753,000	1,339,545	1,979,975	139,584	3,459,105	7,970
1885	246,625,000	1,381,198	1,963,338	128,575	3,495,316	7,271
Western:						
1883	30,873,000	179,337	182,220	27,453	389,010	4,747
1884	43,286,000	255,472	475,459	61,411	792,342	5,611
1885	33,019,000	265,085	448,070	52,079	765,362	4,168

Comparison of receipts and expenses of Java railways—Continued.

Lines.	Working expenses.		Net receipts.		Total distance traversed.	Consumption of coal.	
	Total.	Per kilometer.	Total.	Per kilometer.		Total.	Per kilometer.
Private lines.							
Samarang-Djokjokarta:	*Florins.*	*Florins.*	*Florins.*	*Florins.*	*Kilometers.*	*Kilos.*	*Kilos.*
1883	1,012,360	4,987	2,105,589	10,372	419,120	4,136,000	9.8
1884	1,110,004	5,468	2,034,978	10,024	536,309	4,790,000	8.9
1885	1,162,884	5,728	1,697,702	8,363	570,290	4,787,000	8.4
Batavia-Buitenzorg:							
1883	303,598	5,234	434,509	7,492	220,712	1,445,000	6.5
1884	321,497	5,543	430,065	7,415	235,139	1,377,000	5.9
1885	323,244	5,573	353,325	6,091	242,592	1,398,000	5.3
Government lines.							
Eastern:							
1883	1,055,602	3,386	1,453,439	4,662	907,916	7,708,000	8.5
1884	1,465,949	3,378	1,993,156	4,593	1,354,791	9,857,000	7.2
1885	1,813,398	3,772	1,681,917	3,499	1,497,064	11,020,000	7.3
Western:							
1883	260,147	3,174	128,863	1,572	199,090	1,577,000	7.9
1884	418,702	2,965	373,640	2,645	363,081	2,894,000	8.0
1885	542,266	2,953	223,095	1,215	439,364	3,607,000	8.2

HORATIO G. WOOD,
Vice and Deputy Consul.

UNITED STATES CONSULATE,
Batavia, May 17, 1889.

TEAS OF CHINA AND INDIA.

REPORT BY MINISTER DENBY, OF PEKING.

The curiosities of the tea trade are sufficiently interesting to warrant my calling some attention to them. Prophecies innumerable have been made that the Indian teas would drive the Chinese teas out of the market, but we find from the summary of the first week's tea business in Hankow, which I inclose (a clipping from the North China News of May 21), that never, not even when India and Ceylon teas were unknown, has competition been so keen and have prices been so high. The reason assigned for these remarkable prices is the competition between Russian and English tea buyers. While in London last season's teas are being sold at sacrifices reaching 50 per cent., the new season's teas in China are eagerly competed for at prices 20 and 30 per cent. higher than last year. The one thing for China to do to permanently regain her markets is to take off the export duty.

CHARLES DENBY,
Minister.

UNITED STATES LEGATION,
Peking, May 29, 1889.

[Inclosure in Minister Denby's report.]

The following is a summary of the first week's tea business, season 1889–'90: Arrivals of tea to date—Kiukiang teas (Ningchow, Keemen, Hohow), 162,060 half-chests; Hankow teas (Oopack, Oonam), 131,508 half-chests; total arrivals, 293,568 half-chests.

Settlements from 9th to 16th May, inclusive.

Teas.	Russian buyers.	English buyers.	Total.
	Half-chests	*Half-chests.*	*Half-chests.*
Kiukiang teas	35,090	65,490	100,580
Hankow teas	47,126	30,874	78,000
Total	82,216	96,364	178,580

Leaving unsold stock on market: Kiukiang teas, 61,440 half-chests; Hankow teas, 53,548 half-chests; total, 114,988 half-chests.

Total arrivals of first crop teas last season were: Kiukiang teas, 310,000 half-chests; Hankow teas, 510,000 half-chests; total, 820,000 half-chests.

It remains to be seen what will be the total of this year's first crop. Contrary to original expectation, based on the very large increase in the number of packing hongs established in the various tea districts, it is now announced that the crop will be considerably short of last year's, and, judging by the prices paid, buyers appear inclined to credit the tea men's statements on this head. The quality of the crop is remarkably good, and we seem to be having a repetition of 1886, when the good quality tempted buyers, with the result that fine teas were a drug at home, and so gave heavy losses to the shippers. The prices, of which we give a summary below, exhibit the highest range we can remember, the lowest quotations this year being almost up to the top quotations of 1887, and the range generally being 30 to 40 per cent. above what were then considered the impossible prices of 1888. To these have to be added a higher exchange, and freights £3 to £4, as against £1 to £2 last year. We quote:

	Taels.			s.	d.		s.	d.
Ningchows	31.0	to 60	=	1	4	to	2	4
Keemens	30.0	50	=	1	3½		2	0
Oopacks	20.0	36	=	0	11		1	6
Shantams	15.8		=	0	9½			

The only steamers in port are the *Moyune*, advertised at £4, and the *Anchises*, at £3. Neither vessel has as yet commenced to load.

The high prices are generally attributed to the new Russian element which has popped into the trade this year and bought freely regardless of cost. On the other hand, buyers for London, fearful lest all the fine teas should go by them, have joined in the scramble, and it is reported that the *Moyune* takes over twenty thousand packages to that market of teas costing 1*s.* 8*d.* and upwards.

Altogether the Chinese are having a fine time, and the increased sum thus brought into the country should have a good effect on business generally.

FACTORY INSPECTION IN BOHEMIA.

REPORT BY CONSUL JONAS, OF PRAGUE.

I beg leave to submit a report on the results of factory inspection in Bohemia during the year 1888. The Kingdom of Bohemia, by far the most industrious province of the whole Austro-Hungarian monarchy, Lower Austria excepted, has four factory inspectors with head-quarters at Prague, Reichenberg, Pilsen, and Budweis.

DISTRICT OF PRAGUE.

In the district of Prague two hundred and twenty-eight industrial establishments were inspected last year. The state of business is reported to have been satisfactory, work plentiful. In some branches there was a rise in wages. The lowest wages prevail in the textile industry, although the condition of workmen even in this branch shows an improvement in this respect, that since the compulsory introduction of shorter hours of labor (eleven instead of twelve) which took place on June 11, 1888, the wages have remained the same as before.

DISTRICT OF REICHENBERG.

In the Reichenberg district three hundred and sixty-eight establishments were visited. The inspector reports a frightful condition of things in eight manufactories of matches, where the regulations for the protection of the operatives issued by the Government four years ago were entirely disregarded. There was absolutely no ventilation, and the refuse was collected on the premises in heaps. The baneful gases from the drying-rooms were allowed to escape through small windows, penetrating into the adjacent shops and heightening the deadly state of the air within the same. In one of these factories forty-three operatives fell victims to the dreadful phosphoric necrosis, among them a boy of thirteen years.

In certain carpenter-shops the inspector found apprentices of tender years working fourteen to sixteen hours a day, and during a night visit in a spinning-mill he found more than one hundred women at work, among them many young girls. In some spinning-mills men were employed even eighteen hours a day. Waste-cotton spinning was depressed last year, and in some factories a reduction of wages resulted therefrom. The glass industry, in its three branches of perfecting, cutting of crystals and beads, and production of colored articles of glass, shows an unfavorable condition in regard to wages.

In the textile industry the enforced limitation of the hours of labor, the prohibition of the employment of women and of boys under sixteen years of age at night labor, and the putting up of two thousand new looms in the district had a favorable influence upon the scale of wages, so that there was throughout the district an actual rise of wages in this branch.

DISTRICT OF PILSEN.

In the district of Pilsen two hundred and eighty-two premises were subjected to inspection. In eighteen cases the inspector filed complaints for non-observance of the factory laws, the number of such cases showing, however, a steady decrease. The advice or intervention of the inspector was sought in sixty-one cases by manufacturers, and in fifty-eight cases by workmen, and twelve hundred and eighty-four orders were issued by him in regard to the protection of life and health in factories. The normal day of work is generally observed in the district, but workmen employed on piece-work still disregard it in some instances. Wages show a certain improvement in

most branches, excepting the milling industry, which suffers through the heavy and increasing shipments of Hungarian flour into Bohemia. The condition of workmen in the glass, iron, and machine industries is reported to be, on the whole, satisfactory. Pension funds for operatives have been established with the liberal aid of employers in some factories, and in different other ways the interests and wants of the employés have been cared for.

DISTRICT OF BUDWEIS.

In the district of Budweis seventy-five large manufactories and two hundred and eighty-nine small shops were visited last year. Workmen appealed to the inspector in one hundred and twenty-five cases, and in one hundred and four of such cases his intervention was successful. In the large factories the regulations about the hours of labor are strictly carried out; not so in the small shops.

RESULTS OF SHORTER HOURS.

In the woolen-mills of Schmerler and Kretschmar, at Eger, the hours of labor have been reduced to ten, with a highly satisfactory result. Not only has there been no falling off in the amount of production, but the output has even experienced a slight rise in regard to quantity as well as quality, and the average wages of the workmen have advanced 40 kreuzers per week. Hence there is six hours per week less work, with an increased and improved production, and a slight rise in wages. The same experience was generally made consequent upon the enforced reduction of the former twelve hours to eleven hours of work in the textile industry. We may therefore conclude that in Austria, the same as in England, a positive proof has been furnished that the shortening of the hours of labor in a certain reasonable degree is made up by the increased efficiency and intensity of the work and its results. There are exceptions to this rule, but they do not disprove its general correctness.

CONDITION OF FACTORY OPERATIVES.

Inspector Feyerfeyl last year made a detailed investigation into the economic condition of wage workers, which has brought to light interesting statistical facts. The data collected include 8,770 working-men's families, with 38,245 members, living in 108 communes. Of the whole number of persons comprised in those families 23,548 earn wages. The yearly amount of wages earned was 2,731,200 florins,* or 116 florins per capita of the wage earners. The inspector gives an account of the homes of the working classes in his district which presents a dark and melancholy picture, and the same is true of the general condition of the wage workers. In his opinion the great needs of the Budweis district, forming the southern part of Bohemia, and offering great natural facilities for industrial development, are a more diversified industry, an influx of capital, and more enterprise.

CHARLES JONAS,
Consul.

UNITED STATES CONSULATE,
Prague, July 1, 1889.

* The florin was valued, for 1888, by the Treasury Department at 34.5 cents.

HONG-KONG.

REPORT BY VICE-CONSUL R. E. WITHERS, JR.

AGRICULTURE.

The island of Hong-Kong, being only about 27 miles in circumference, and consisting of a broken ridge of lofty hills, with few valleys of any extent, possesses scarcely any ground available for cultivation. This being the case, the agricultural resources of the island are necessarily very limited, garden vegetables and a small supply of rice being the only productions. The estimated acreage of the colony is as follows: Hong-Kong, 18,102 acres; Kaulung (Kauloon), 1,721 acres; Stone Cutter's Island, 192 acres. Of these 20,015 acres only 406 in Hong-Kong and 412 in Kaulung are cultivated.

The number of live stock in Hong-Kong is as follows: Horses, 204; horned cattle, 1,165; sheep, 800; goats, 688.

MANUFACTORIES.

The number of manufactories and the kinds are as follows: Aerated waters, 10; artemisia-oil, 2; bakeries, 15; bamboo-ware, 48; boat building, 55; carving, 20; cigars, 3; copper-ware, 57; gold beating, 12; gold and silver ware, 63; distilleries, 4; dry-docks, 6; furnaces, 6; ginger preserving, 7; ginger-oil, 1; glass blowing, 5; ice-works, 1; image making, 31; iron ware, 59; iron foundries, 4; lantern making, 20; leather boxes, 12; oars, 26; opium preparing, 1; paper boxes, 7; patent slips, 2; rattan-ware, 57; rope and sail works, 26; sandal-wood ware, 11; sapan-wood ware, 11; soap, 1; spectacles, 2; soy, 23; sugar refineries, 3; tin-ware, 20; tobacco, 23; tooth-powder, 1; umbrellas, 18; vermilion, 9. It is impossible to give the product or value of these industries from any data accessible.

There were twenty-four steam-launches and other vessels built in the colony, with 1,655 tons burden. Granite quarries of the number of 101 were worked during the year, the value of products being $78,800.

FISHERIES.

The number of fishing boats frequenting the harbor and bay of Hong-Kong may be estimated at three thousand. There are no means of ascertaining description, quantity, or value of the fish.

CURRENCY.

The currency of the colony consists of the following coins, viz: The silver dollar of Mexico, the Hong-Kong dollar and half dollar, silver coins issued from Her British Majesty's mint, known as the 20, 10, and 5 cent pieces; copper or bronze coins, also issued from Her British Majesty's mint, known as the 1-cent piece and the mill or cash.

The approximate amount of Hong-Kong dollars and half-dollars struck at the Hong-Kong mint was $1,421,487. The approximate amount of Hong-Kong silver and copper subsidary coins (20,108 5-cent pieces, and 1-cent and mill pieces) put into circulation up to December 31, 1888, was $2,482,091.

It is impossible to state how many of the above coins and coins of other denominations are in circulation, but the probability is that of the Hong-Kong silver coins there is not 10 per cent. of the total issue at the present time within the colony. The importation of copper coins has been discontinued.

Exchange.—The rate of exchange between here and London varied almost daily. The highest rate on four months' bills on London was 3*s.* 2⅛*d.* per dollar, in January, and the lowest was 3*s.* per dollar, in May.

HARBOR ENLARGEMENTS.

During the year upward of twelve limited liability companies were floated. A scheme, known as "The Praya Reclamation Scheme," has been started to reclaim the foreshore. The idea is to extend the present water-front 250 feet into the harbor. This will enable all vessels to lay alongside the sea-wall and wharves in deep water, and will open new building sites on the lower level of the city, where at present so little ground is available. The Government has sanctioned the scheme, and work has already begun. The expense of reclaiming is to be borne partly by the Government and partly by the marine lot holders.

COMMERCE.

The following table will show the number, tonnage, and crew of vessels of all nationalities which entered and cleared at the port of Hong-Kong during the year 1888:

Nationality.	Entered.			Cleared.		
	Vessels.	Tons.	Crews.	Vessels.	Tons.	Crews.
American	57	87,610	2,813	62	91,231	3,200
Austrian	10	21,466	668	10	21,466	651
British	2,573	3,255,069	120,139	2,548	3,219,274	119,946
Chinese	154	196,233	7,692	139	176,917	6,775
Chinese junks	23,958	1,863,968	310,081	23,609	1,839,739	306,498
Danish	82	32,481	1,786	79	31,835	1,725
Dutch	28	35,698	1,464	27	34,964	1,417
French	73	135,780	8,712	74	135,413	8,727
German	704	624,003	21,391	675	603,681	21,397
Hawaiian	2	2,266	51	3	2,819	70
Italian	18	25,437	1,050	18	25,437	1,237
Japanese	37	51,704	1,916	36	49,289	1,813
Norwegian	38	35,224	861	41	37,851	946
Russian	6	11,705	597	5	9,965	471
Siamese	8	4,149	145	9	4,850	169
Spanish	33	18,569	1,505	33	18,656	1,514
Total	27,781	6,401,362	480,871	27,368	6,302,687	476,616

Hong-Kong being a free port there is no way of ascertaining the amount and value of imports and exports to and from the colony. For the same reason no report can be given of the amount and value of imports from the United States.

EXPORTS TO THE UNITED STATES.

The principal exports to the United States and the amount of each are given in the following table:

Articles.	Value.	Articles.	Value.
Cartridges	$587	Prepared and crude opium	$154,459
Cassia	198,277	Quicksilver flasks	2,031
China-ware	12,967	Rattan	33,782
Cigars	1,184	Rags	496
Clothing	323,992	Rice	951,729
Curios	3,763	Rope	151
Camphor-wood trunks	1,092	Sago	2,766
Coffee	8,425	Silver-ware	610
Fans	12,234	Sugar	14,855
Fish-nets	1,898	Shoes	59,481
Fire-crackers	183,624	Silk and silk goods	1,021,461
Hats (pith and Chinese)	1,338	Slippers	290
Matting	368,054	Sundries	132,700
Medicine	62,226	Tea	141,460
Nutmegs	16,759	Tobacco	50,841
Oil	298,858	Tapioca flour	53,929
Ore	150	Tin	14,600
Preserves	4,472	Timber	2,200
Paper	20,097	Wine	28,978
Pepper	6,144	Total	4,681,263
Personal effects	2,620		
Provisions	485,683		

As compared with the exports for the previous year (1887) the above shows a falling off in value of $373,025. There was an increase in the following exports to the United States: Cassia, clothing, curios, fire-crackers, matting, medicine, nutmegs, oil, provisions, opium, quicksilver flasks, rice, rope, and sugar, while there was a decrease in cigars, camphor-wood trunks, cartridges, fans, fish-nets, hats, preserves, paper, pepper, personal effects, rattan, sago, shoes, silk and silk goods, slippers, sundries, tea, tobacco, tapioca flour, and wine. The articles included under the head of sundries are numerous, but the quantity of each is small—ivory, sandal-wood, betel-nuts, amber, dried fish, vegetables, salt eggs, dried fruit, etc. The following articles, amounting in value to $26,481, were exported from this port in 1888, with no corresponding shipments in 1887: Coffee, ore, rags, silver-ware, tin, and timber. Likewise, in 1887, gin, human hair, rifles, and trade dollars, amounting in value to $60,344, with no corresponding shipments in 1888.

IMPORTS FROM THE UNITED STATES.

The leading articles imported into Hong-Kong from the United States are kerosene-oil, flour, cotton goods, canned fruits, vegetables and meats, ginseng, clocks, watches, some machinery, etc.

REVENUE AND EXPENDITURES.

Revenue.—The revenue of the colony for the year 1888, including premiums from land sales, amounted to $1,557,300.03, derived from the following sources:

Lands	$186,988.44
Rents	79,619.99
Licenses	244,742.13
Taxes	547,442.11
Postage	144,218.89
Fines, etc	41,231.15
Fees of office	159,814.99
Sale of government property	7,423.02
Reimbursements	30,392.91
Interest	8,084.12
Miscellaneous	107,341.28
Total	1,557,300.03

Expenditures.—Ordinary expenditures, salaries, etc., $1,461,459.64; extraordinary public works, $530,870.03; total, $1,992,329.67; excess of expenditures over revenue, $435,029.64.

LAW AFFECTING AMERICAN SEAMEN.

Several important changes have been effected during the year, and many new enterprises floated. A number of ordinances were enacted by the legislative council, but with one exception they do not affect the interests of the United States. The "vagrancy ordinance" of February, 1888, stipulates that when any person not a Chinese lands in this colony under an engagement to serve any person, company, or association, or body of persons in any capacity, and whenever any sailor, other than a Chinese sailor, is discharged from his ship in this colony, and such person or sailor becomes chargeable to the colony as a vagrant within a period of six months after his arrival here, or after his discharge from his ship, as the case may be, then the person, company, association, or body to serve whom he has so landed in Hong-Kong, or, in the case of a sailor, the person who was at the date of his discharge the owner or agent of the ship from which such sailor has been so discharged, shall be liable to pay to the Government the cost of his removal under this ordinance and all other charges incurred by the colony in consequence of his becoming a vagrant.

Every master of a ship landing or allowing to land in this colony any person other than a Chinese, who at the time of his landing is obviously destitute of means of subsistence, or does actually become so within a period of six months from the date of landing, shall be liable to repay to the Government of this colony all costs and charges incurred by the colony in consequence of such person becoming a vagrant, unless such master satisfy the court that he made due inquiry as to the person so landed or allowed to land, and that he had reason to believe such person was possessed of means of sub-

sistence. In the absence of such master of a vessel the owner, agent, or consignee of such vessel at the time the person who subsequently became a vagrant was allowed to land shall be liable to pay the said costs and charges on his behalf.

It will be readily seen that this may operate disastrously for ship-masters, owners, or agents, for it very often happens that a master of a vessel ships a foreign crew in a foreign port to be discharged here in good faith. On account of large advances the crew has very little money, and in consequence the boarding-houses will not take them in, so that the master frequently has to pay a sum of money to the boarding-house master to keep the men in order to escape the operations of the above ordinance.

TRAM-WAYS.

The Hong-Kong High Level Tram-way was formally opened in May, since which time the cars have run regularly to and from the Peak. The cars are, perhaps, not all they should be as regards appearance and comfort, but the line is a great convenience, as one can now reach the Peak in less than fifteen minutes, instead of one hour, as used to be the case when carried in sedan-chairs. This has very much enhanced the value of property at the Peak. There was a great boom in building sites, and the Government sold a number of lots for several times the amount of their upset prices. At the upper terminus of the tram-way, or cable road, the Peak Hotel Company has a bar and restaurant, kept in very nice style. This same company has erected a hotel with twenty bed-rooms for the accommodation of summer visitors. Buildings are being rapidly erected, and at present there are upwards of seventy-five dwelling-houses.

WATER SUPPLY.

In November the water supply from the Tytam reservoir was laid on. Previous to this the supply was very limited, but now water is to be had in abundance.

MISCELLANEOUS.

Population.—The estimated total population of the colony of Hong-Kong on the 31st of December, 1888, was 160,402, as follows:

Sex.	Whites.	Chinese.	Colored.
Males	6,356	107,661	1,352
Females	1,634	43,029	370
Total	7,990	150,690	1,722

Births and deaths.—For the year 1888 the births and deaths were as follows:

Population.	Births.	Deaths.
British and foreign	163	249
Chinese	1,469	5,785
Total	1,662	6,034

Marriages.—During the year thirty-three European couples were married by the Church of England service, and twenty-six by the Roman Catholic. There were thirteen Chinese couples married by the Roman Catholic service.

Wages for labor.—Domestic servants, employed by Chinese, $12 to $36 per annum, with board and lodging; Chinese, employed by foreigners, $48 per annum and upward, without board. Trades: Chinese workmen, $60 and upward per annum, with board and lodging. Mechanics, without board, per diem: Blacksmiths, from 40 cents to $1; carpenters and joiners, from 20 to 50 cents; masons and bricklayers, from 30 to 40 cents; laborers, from 20 cents to $1.

Cost of food, etc.

Articles.	Price.	Articles.	Price.
Wheaten flour.....per barrel of 196 pounds...	$8.00	Coffee.....per pound...	$0.35
Wheat.....per imperial bushel...	1.60	Tea.....do.....	.50
Wheaten bread.....per pound...	.06	Sugar.....do.....	.07
Milk.....per quart...	.20	Salt (table).....per jar...	.18
Butter:		Wine.....per dozen quarts...	*7.00
Fresh (supply very limited).per pound...	1.00	Brandy.....do.....	*10.00
Tinned.....do.....	*.50	Beer.....do.....	*3.00
Cheese.....do.....	*.40	Beer.....per dozen pints...	*2.00
Beef.....do.....	.12	Tobacco:	
Mutton.....do.....	16	Tins.....per pound...	.70
Pork.....do.....	.12	Cakes.....do.....	.35
Rice.....do.....	.03½		

*And upwards.

Prices of live stock.

	Per head.	
Horned cattle	$26.00	and upwards.
Horses	70.00	
Sheep	6.00	
Goats	3.00	
Swine	8.00	

R. E. WITHERS, JR.,
Vice-Consul.

UNITED STATES CONSULATE,
Hong-Kong, June 29, 1889.

DECAY OF ST. HELENA.

REPORT BY CONSUL COFFIN.

Since the opening of the Suez Canal this once wealthy island has been gradually declining. Many of the merchants have emigrated for the want of business, and at the present time there are very few left, and there is not much business for them. Their sons, as soon as they are old enough, seek their fortunes in other countries. Their whole dependence has been on ships calling here for provisions, vessels in distress putting in for repairs, the whaling fleet recruiting here, and the disbursements made by the Imperial Government in maintaining the garrison.

Owing to the improvements made in canning provisions ships go to sea better provided than in former years, and seldom have to call here for provisions. If they have sick or wounded seamen on board, they call here for medical assistance. This island, lying, as it does, in the direct track of all vessels coming around the Cape of Good Hope, will always be a port of call for ships in need of medical assistance. Cape Town, having good docks, vessels in distress try to get into that port, and it is only when the cause of their distress happens after they have passed the cape some distance that they put into this port. This port is an open roadstead, and the facilities are not great for repairing a ship, and they are usually condemned here. The whaling fleet, owing to the low price of oil, has fallen off to about one-third what it was a few years ago. The English men-of-war of the African squadron rendezvous at the island of Ascension, and seldom call here.

The Imperial Government has been reducing the garrison here, and in their army estimate they have appropriated for the island the sum of £10,000, instead of £25,000, the sum usually appropriated.

It appears that the resources which they have always depended on have fallen off about two-thirds, while the population continues to increase, most of the laboring men having large families. At present there is a large surplus of labor on the island. The English mail steamers calling at this port have, within a short time, reduced their rate of passage one-half from this island to Cape Town to encourage emigration. Unless some article of export is discovered to call ships to this port this surplus of laborers will have to emigrate or starve.

The population of the island is a little over 5,000, and I doubt whether there is arable land enough on the island to produce enough to feed that number. Most of the population have always lived, and still live, on fish and rice; the latter has to be imported.

The whalers employ a large number of the island men in their business, and prefer them to any other. They are an active, intelligent, and temperate people. The whaling fleet recruited here in September and again in March.

The American schooner *Lottie Beard*, of New Bedford, made her semi-annual trip with supplies for the whalers, taking their oil home. She also brings part of a cargo for the island.

The imports from the United States consist of flour, grain, furniture, lard, lumber, petroleum in cases, provisions, sugar, and sundry other small articles. There is also imported from Australia about 200 tons of flour, which they mix with the flour imported from the United States. Most of the sugar consumed here is imported direct from Mauritius.

There are no tonnage dues at this port. On goods imported here the wharfage rates were increased to make good the loss of revenue in taking off the tonnage dues.

JAMES B. COFFIN,
Consul.

UNITED STATES CONSULATE,
St. Helena, June 30, 1889.

AFFAIRS IN GIBRALTAR.

REPORT BY CONSUL SPRAGUE.

AMERICAN TRADE IN GIBRALTAR.

I regret to have to record the non-appearance at this port during the past quarter of any American merchant vessels, with the exception of three yachts; nor does the general trade here connected with the United States seem to have improved. The importations of refined petroleum direct from the United States have, however, been very regular, but the prevalence of increased competition in this market has rendered prices for the articles less remunerative than during previous months; still, I am able to state that Russian supplies have not entered into this recent increased competition.

The undesirable condition of the cases which contain petroleum, both without and within, as imported from Batoum, in the Black Sea, has so far proved to be such a serious objection as to discourage retail dealers from buying it freely. I understand, however, that those who are interested in the working and the refining of this Russian petroleum are using every means to improve matters in that direction, feeling persuaded that they will eventually succeed in obtaining an important control in the leading markets of the world for the sale of their supplies by improving its quality and the casing of it to suit the demands of all foreign markets.

SHUTTING OUT TOBACCO SMUGGLERS.

The principal reason to account for the present dullness of trade here may be in some measure explained by further stringent restrictions having been recently adopted by the British authorities against all those Spanish subjects who are classed by their own officials as being in the habit of purchasing tobacco in this market for the purpose of smuggling the article into Spain from this city by the land route. It is presumed that their names are regularly given by the Spanish officials to the police authorities of Gibraltar, who, in their turn, refuse them admittance into this city, even on a daily

permit. I understand that there are days when over two hundred persons, placed under that category, have been refused the privilege of entering this town even for a few hours.

This somewhat unprecedented and arbitrary proceeding naturally greatly affects the general commercial interests of this market, and, if persevered in for any lengthened period, must eventually cause serious results, even to that portion of the Gibraltar community holding freehold and leasehold properties here, many of whom are entirely dependent upon their rents for their support.

So far the protestations of those most interested in the general commerce of Gibraltar against the adoption of this recent stringent measure seem to have had no influence in modifying the present actions of the British authorities, which would rather seem to indicate that there exists a determined desire on the part of the British Government to assist Spain in protecting her revenue interests in this immediate neighborhood, or to favor those capitalists who now have to do with the farming out of the tobacco monopoly in Spain, even to the serious detriment of the Gibraltar commercial community, notwithstanding that a large portion of the latter are constantly paying into the colonial treasury considerable sums for ground-rents, licenses, etc., for carrying on trade here in a fair and legitimate way. The case seems to be quite an exceptional one, especially as Gibraltar is classed as a free port.

A CORK-WOOD FIRE.

Just as the Spanish cork-wood industry for export from this port and immediate coast was being actively pursued, a terrible fire broke out on the 21st ultimo at the principal cork factory, established at the Spanish lines for account of some of the leading inhabitants of Gibraltar, at a very short distance from this city, where hundreds of bales of bottle corks and some thousands of tons of cork-wood were stored and being prepared for early shipment to England and the United States. Hardly any of this large quantity of cork-wood has been saved, since the fire spread with great rapidity through stacks of cork-wood over 30 feet in height, which soon became a prey to the flames. Fire-engines and several companies of British soldiers were sent from this fortress to the scene of conflagration to assist in extinguishing the fire, but to little or no purpose, for the engines made no impression upon the immense mass of burning material, and, water running short, the troops returned to their respective quarters after several hours of hard work. I am happy to add that no loss of life occurred.

The origin of this conflagration can not be traced, but there are many who indulge in the supposition that it has been the work of an incendiary, since it is generally rumored that quite a number of Spanish workmen had recently been discharged from that cork factory and been replaced by others of Portuguese nationality, who had accepted lower rates of wages.

The insurance effected on the cork-wood destroyed by fire is said to amount to $115,000, which sum is distributed between one Spanish and four London offices.

EMIGRATION FROM SPAIN TO THE ARGENTINE REPUBLIC.

The continued extensive Italian emigration to the Argentine Republic now seems to have extended to the Spanish laboring classes. A Spanish steam-vessel left this port on the 1st instant for Buenos Ayres with over eight hundred Spanish passengers, two-thirds of them having taken passage at this port, most of whom came from towns and villages in the province of Andalusia. This circumstance taking place just at the moment of the harvest season throughout Spain would indicate that the agricultural condition of that Kingdom does not improve, but that, on the contrary, it is becoming still more discouraging for the laborer as to oblige him to abandon his home in search of better wages, if not a happier existence.

I understand that emigrant companies established in the Argentine Republic, through their agents in Spain, encourage to an unlimited extent Spanish emigration to that Republic, and that every facility is afforded to those willing to proceed thither for agricultural and mining purposes.

Such an extensive drain upon the population of Spain, if continued, must ultimately cause serious influence upon its laboring and artisan resources, which at the best of times have not been overplentiful, and should, I presume, call the attention of the ruling powers of Spain in coming to some kind of relief of a stalwart class of a population, which, under other circumstances, should be under no necessity to seek that relief in emigrating to such a distance from their native country.

HORATIO J. SPRAGUE,
Consul.

UNITED STATES CONSULATE,
Gibraltar, July 3, 1889.

COMMERCE OF PALERMO.

REPORT BY CONSUL CARROLL.

In forwarding herewith the statements on trade, during 1888, of this port and certain others within the jurisdiction of this consulate,* I have the honor to say that I have made frequent and unavailing efforts to obtain an authentic statement of the products within the compass of the district from the proper authorities, and, as success in that direction seems as far off as it was last March, I have determined to wait no longer for the promised information in question, but to submit such as I have been able to procure.

In this connection it may be proper to say that information of all kinds is very difficult to obtain here. No one can do anything without authority from Rome, and it is rarely the case that any official knows anything outside of that place, or, if he does, will impart it. The collector of customs, for instance, can not give a statement of the imports or exports without obtaining permission from that city, and this permission is only given with the understanding that the consul shall send a person to the office of the collector

*These statements are reserved for Commercial Relations for 1887–'88.

to make the statement at his own expense. This method would consume months, and the expense would be correspondingly great, so it is obviated by paying an employé of the custom-house who is conversant with the books and records to do the work, which, when obtained, involves much time and labor in translating, etc.

If consuls in the United States were subjected to the trouble and inconvenience to which American consuls are subjected in this respect in certain foreign countries, it would, no doubt, have a salutary effect, and cause the countries in question to at least change their rules.

EFFECTS OF THE ABROGATION OF THE TREATY WITH FRANCE.

With reference to the imports and exports during the year referred to, both have diminished, compared with recent years, consequent upon the comparative non-intercourse policy which has obtained between Italy and France for some time, or since the abrogation of the treaty of commerce. This policy seems to have affected trade with all countries, generally unfavorably.

To England, Holland, Spain, and Switzerland there was an increase of exports; and Denmark, Greece, Sweden, and Norway, to which no goods were exported in 1887, appear in the list of countries to which goods were exported in small quantities in 1888. Portugal, Spain, and Switzerland only show a small increase in imports, all other countries exhibiting a considerable decrease therein, the United States, for instance, falling off $477,696.60, and in exports $1,614,727.60, compared with 1887, while France, strange to say, only fell off $119,517.60 in her exports and $1,072,151.60 in her imports.

The total exports during 1888 amounted to $6,633,849.40, and the total imports to $4,461,080.20, thus making the total trade of this port for the year adverted to $11,094,929.60. The exports during 1887 amounted to $8,539,788 and the imports to $7,197,575.20, the total trade of this port for that year being $15,737,363.20, a difference of $4,642,433.60 in favor of 1887.

The duty collected on the imports during 1888 amounted to $941,090.49 and that collected upon the exports was $50,950.29, making the total duty collected at this port during the year named $992,040.78.

The abrogation of the treaty between Italy and France has been very detrimental to the interests of this port, and, indeed, to all Italy. Previous thereto a regular line of French steamers plied between this and French ports, and many other French vessels touched thereat en route to or returning from other ports. Now, however, no French steamers are seen in the port, and trade with France is practically cut off; and should this state of things continue and no market should be found for Italian products to compensate for the loss of France the outlook for Italy is bad, as, indeed, it is for France, as the latter suffers greatly from the loss of the cheap Italian wines, with which no other country (not even Spain, whither she has gone in her dilemma to find wines,) can supply her with so much advantage to herself.

Since the termination of the treaty, or rather its abrogation, importers have preferred to exhaust the stock on hand rather than to import, in view of

the regulation requiring a certificate of origin for each importation, no matter whence it came, from the Italian consul or other competent authority, without which the importer would be required to pay duty at the French rate, as in its absence the goods would be assumed by the officers of the customs to be of French origin. Those who had no stock on hand and who desired to import French or other articles had, of course, to take the risk, and, in the event of there being no Italian consul or other proper authority whence the goods emanated, pay the French rate of duty in lieu of the certificate of origin.

The wine industry seems to be the most important in Italy, and the abrogation of the treaty has been felt more, perhaps, by those engaged therein than by any other class. Previous to that event the duty on wines entering France from Italy was 2 francs per hectoliter; now, and since the event in question, it is 20 francs per hectoliter, which, of course, is equivalent to prohibition. During the period of the treaty wine sold at from $4 to $6.40 per hectoliter, according to the quality; now it sells at from $2 to $2.80 per hectoliter. Still, there does not appear to be any appreciable difference in the retail price thereof.

The present condition is anomalous, and can not, it is believed, last much longer. Both countries are undoubtedly tired of it, and each would like to find a solution therefor without a compromise of dignity. Both have endeavored to compensate themselves for the loss which the abrogation of the treaty entailed—Italy in finding a market for her wines, and France in finding a place where she can buy those she desires at the same advantage as in Italy—and both have failed.

Prior to the abrogation of the treaty Sicily alone exported 90,000,000 gallons of wine yearly to France, from which it will be seen that this island suffers greatly from the present non-intercourse policy. As previously hinted, France now imports such wines as she desires from Spain, Portugal, and Denmark at the same rate of duty as upon those formerly imported from Italy. All this wine, after being subjected to certain processes, is exported as French wines, just the same as our own California wines, after being exported to France, are returned to us as French wines.

During the year 1888 the green fruit exports from this port to the United States decreased $842,036.24 in value, consequent upon the abundant crops thereof in the United States and other places and the low prices which ensued as a result, compared with 1887.

Compared with former years little brimstone is now exported from Sicily in consequence of the low prices which obtain, and it is feared by some that the industry may have to be abandoned in the not very distant future.

Should former relations with France not be restored, and no market is found for Sicilian wines, and the exports of green fruit and brimstone continue to decrease, the outlook for Sicily is not inviting, as she has no other industries, and the home consumption of the two former is not sufficient to warrant their continuance to the extent upon which they are now conducted.

General report says that the crops during the year under consideration were abundant, but, as stated, no detailed, authentic, or official information can be obtained thereon until the Government at home shall have published data in connection therewith, the chamber of commerce here, nor no other authority, appearing to know anything about it.

AMERICAN GOODS IN PALERMO.

The demand for American goods continues in this district, but the apathy of American exporters in not generally adopting the course pursued by England, Germany, and other countries with a view of introducing their goods is a cause of regret. As stated in previous reports the countries in question send representatives here, who sell goods in accordance with the usage of the place, and this, as a rule, has turned out advantageously to all concerned.

EMIGRATION FROM ITALY.

Emigration from Italy during 1888 was largely in excess of any previous year. According to a Roman authority it amounted to 290,751 persons. Many reasons are assigned therefor, but the best, perhaps, is that the people embraced in the number referred to desired to seek homes in which their conditions and prospects would be enhanced.

NAVIGATION.

During the year under consideration 1,610 vessels entered this port and 1,666 sailed therefrom, neither those entering nor those leaving embracing an American vessel.

PHILIP CARROLL,
Consul.

UNITED STATES CONSULATE,
Palermo, July 10, 1889.

CUTTLE-FISH TRADE AT NINGPO.

REPORT BY CONSUL PETTUS.

One of the principal, and, perhaps, most profitable industries of this consular district is the *ming fu*, or cuttle-fish trade. For two months, from the latter part of April until the closing days of June, the number of small and somewhat barren islands of the Chusan Archipelago, situated within a radius of 50 miles of Chinhae (at the mouth of the Yung River), swarm with men engaged in the occupations of cleaning and drying the fish for the Ningpo market, and the adjacent waters are literally covered with boats engaged in fishing.

With regard to the number of men and boats employed, it is impossible to give an exact report; but culling the figures supplied by men who have been in the business all their lives as a basis for my calculations, and comparing the results with the conclusions arrived at by others who had taken the trouble to study the subject, I find so little difference that I feel confident that my estimate is, as near as possible without an actual count, correct.

Placing the number of boats which leave Ningpo and its immediate vicinity at twelve thousand, and adding another two thousand as the number leaving the numerous small hamlets along the coast and larger islands of the Chusan group, we have a total of fourteen thousand boats, each of which carries an average crew of six men, which gives a total of eighty-four thousand men actually engaged. These men are drawn, principally, from the agricultural classes, receiving each from $8 to $20 for their services during the season.

The cuttle-fish boats are from 25 to 30 feet in length, with a beam of 7 feet. They are furnished with a single lug-sail, usually made of foreign T-cloths tanned with mangrove bark; they are worked with two, sometimes three, sculling-oars, with which the boats are propelled with astonishing speed. The boats, as a rule, work in pairs, a bamboo fastened at the bows of each to keep them separated, with a space of about 20 feet between. To the bamboo is attached the large net. Others, again, catch the fish by means of a square net fastened at the corners to the ends of two slender bamboos, which cross at right angles and sewed together in the middle. These bamboos, with the attached net, are suspended from a stout beam which projects some distance over the bow and has fastened to the in-board end a heavy weight for facilitating the raising of the net. This is used in shallow water, and principally at night, when a fire is kept burning in a pan in the bow of the boat to attract the fish. One or two men attend to the working of this net while the rest of the crew are employed in scooping in the fish with hand-nets. The boat loaded, the fish are landed, cleaned, and sun-dried. The drying occupies about three days. They are then shipped in packages of about 333 pounds each by small junks to Ningpo.

It is impossible to ascertain from the authorities the annual amount exported by native junks, but the quantity must be something enormous. The following table shows the amount annually exported by foreign vessels and by Chinese-owned ships of foreign type, an amount which probably covers one-half the entire export:

Years.	Quantity.	Value.
	Piculs.	*Mex. dolls.*
1884	55,876	335,256
1885	36,397	218,982
1886	52,410	314,460
1887	47,881	287,286
1888	43,468	260,808

The cuttle-fish is called by the Chinese *wu tsê* (black thief); *ming fu* is the commercial name of the fish when dried. The black liquid secreted by the fish was used as a substitute for ink, but was abandoned, as it faded after a lapse of a few years.

THOS. F. PETTUS,
Consul.

UNITED STATES CONSULATE,
Ningpo, June 11, 1889.

THE CURRANT CROP OF GREECE.

REPORT BY CONSUL HANCOCK, OF PATRAS.

About this time last year I reported that the growing crop of currants would reach a total of 150,000 tons. Just this quantity has been shipped up to the present, and about 8,500 tons are still remaining, most of it, however, of very inferior quality, fit only for the local distilleries. Thus the total crop has proved to be 158,500 tons, or the largest by about 30,000 tons ever produced. The fruit thus far has been distributed as follows:

	Tons.
United States	12,973
United Kingdom	64,554
France	40,988
North of Europe	27,881
Canada	1,630
Australia	1,111
Russia	903
Total shipped	150,040

The direct shipments to the United States from the crop of 1887 were 13,037 tons, so that, notwithstanding the very plentiful supply, the consumption in the States has not increased. There are several reasons for this; in the first place, American importers early in the season allowed themselves to be saddled with large quantities of high costing fruit and of but indifferent quality; seeing their mistake, they went to the other extreme and only offered very low prices, without giving much attention to quality, and here again they had the worst of it, for to meet them in price all sorts of rubbishy fruit was shipped off, which no doubt disgusted the consumers and checked consumption. I do not mean to say that all the shipments were of this description, but the bulk. Several of the importers recognized the advantage of paying something more and getting a good article. As a rule, however, last year's crop was of inferior quality. The produce was so plentiful that the vines could not nourish it, and a deal of fruit was cut before it was properly ripe, and, to make room for the second cuttings, was housed before being sufficiently dried. Early in the season these defects were only slightly perceptible, but as time went on they began to show, and when the weather commenced to get warm the fruit rapidly deteriorated, and most of that now left is of this description.

The large crop and the consequent low prices have tended to increase the consumption in the north of Europe proportionally greater than in other countries. From the crop of 1887 this division took only 15,267 tons. There is no doubt that a deal of the surplus quantity has been used in making wine and in improving the poor wines, but there are no large establishments for wine making from dried fruit in Germany, as in France, but possibly the business is kept quiet through fear that the large local wine producers may call out for protection, as they have been doing in France.

Throughout the past year very energetic measures have been taken by protectionists in France to induce the Government to put a prohibitive duty on currants, and the question has several times been discussed by a committee of the Chambers, and still remains an open question. The fear that such a duty might at any moment be imposed has tended greatly to check the trade, and accounts for France not having taken a large proportion of the crop.

THE COMING CROP.

The weather so far has been most favorable for the growing crop, but the show of fruit is not nearly so plentiful as last year, but is well developed and promises to be of superior quality. According to many, however, there will be a falling off in quantity, as compared to last year, of 20 per cent., and this is probably only slightly exaggerated as regards particular vineyards, but I have always found that the new plantations (which from the fifth to the tenth year always give large increase) make up for any such deficiencies, and venture to state that I am of opinion that the crop will not prove below 140,000 tons, not taking into account, of course, damage from rain or other disaster that may occur between now and the housing of the fruit.

The severe lesson many growers had last year will make them extra careful in allowing the fruit to ripen thoroughly, and see that it is properely cured.

At present prices for last year's fruit are exceptionally low, say, for fair, ordinary fruit (nothing better remains) equal to 10*s.* 6*d.* to 11*s.* 6*d.* per hundred-weight, in barrels, cost and freight to New York. It is, therefore, very probable that prices will open moderately. Shipments of new fruit will commence about the 15th of next month.

E. HANCOCK,
Consul.

UNITED STATES CONSULATE,
Patras, July 10, 1889.

COMMERCE OF CANADA.

REPORT BY CONSUL HOTCHKISS, OF OTTAWA.

The statistical returns of Canada for the fiscal year of 1888 have been delayed till after the opening of Parliament in February and too late to be made available in embodying the requisite and customary statistical information, by tables, relating to Canadian trade and navigation of the year 1888, but in a general way I may impart the deductions gleaned therefrom.

The Dominion trade and navigation returns for the fiscal year of 1888 show beyond question that the most profitable and natural market for the products of Canada is in the United States. Canada sold to the United States in 1888 merchandise to the value of $42,572,065, and to Great Britain $42,094,984, showing an excess of sales to the United States of half a million dollars.

The import statement is still greater to the credit of the United States in its dealings with the Canadian people. There was imported from the United States $48,481,848, which is nine millions greater than the imports from Great Britain, thus showing that the Canadian people find it more profitable and congenial to trade with the people of the United States than with Great Britain. No doubt contiguity of territory has much to do with this condition, and it is a condition which must always act as a factor in determining the volume of the trade of Canada as between the United States and Great Britain. Canadian merchants may obtain their purchases in the United States in a few hours, as it were, while sixty days from Great Britain is a low average of time.

In 1887–'88 the aggregate trade of Canada with Great Britain was $81,383,205 and with the United States $91,054,913. Thus the Dominion trade with the United States was, in round numbers, ten millions greater than with Great Britain. Compared with the figures of 1886–'87 the returns for 1888 show that the trade of Canada with Great Britain declined, the aggregate for 1886–'87 being $89,534,079. In that year the trade with the United States was $82,767,265, showing an increase of over eight millions with the United States, against a decrease of over eight millions with Great Britain.

The exports to the United States increased from $37,660,199 in 1886–'87 to $42,572,065 in 1887–'88, while the exports to Great Britain declined from $44,571,846 to $39,298,721 in the same period.

The imports from the United States in 1887 were valued at $45,107,069, while in 1888 they amounted to $48,482,848. In the same period the imports from Great Britain declined from $44,962,233 to $42,084,984, showing that while the general aggregate trade of the Dominion declined slightly in 1888 there was a large increase in the trade with the United States.

The volume of trade with Great Britain—imports and exports—was smaller in 1888 than any year since confederation (in 1857), while the transactions with the United States were larger than in any preceding year, except in 1882 and 1883.

These are a few of the interesting points which tend to show that it is more natural and profitable to trade with neighbors than with a people living 3,000 miles distant, and conclusively show that the course of trade is north and south, not east and west. The trade returns show that Canada sold more to the United States than to any other country, as well as purchased more in United States markets. They show that more than one-half of her exports of home products went to the United States; that the mutuality of trade interests is valuable to both countries alike, and that the people at large are favorably disposed toward goods of American production, both as to quality and style. And, beyond all, it may be learned from these showings that, were efforts made in the right direction (possibly I may say were the Canadian people strictly a free people to adopt such trade relations with other nations as their judgment should lead them to do) their natural neighbors would in a far greater degree become their natural customers, and *vice versa*.

The following table will show the classes of merchandise exported by Canada to other countries in 1888 and the proportion going to the United States:

Description.	Total.	Sold in United States.
Produce of the mines	$4,110,937	$3,341,308
Produce of the fisheries	7,793,853	3,123,853
Produce of the forests	21,302,841	10,622,338
Animals and their products	24,719,297	7,595,743
Agricultural products	15,436,278	10,306,278
Manufactures	4,161,282	1,632,025
Miscellaneous	773,877	701,616
Total	77,298,365	37,323,161

Thus it may be seen that one-half the exports of Canada of lumber and other forest products are disposed of in the United States, over three-fourths of the minerals, two-thirds of her agricultural products, nearly one-half of her fish, 40 per cent. of her manufactured articles, and practically all of the miscellaneous products.

THOS. W. HOTCHKISS,
Consul.

UNITED STATES CONSULATE,
Ottawa, February 20, 1889.

COMMERCE AND INDUSTRIES OF GERMANY.

REPORT BY CONSUL-GENERAL MUELLER, OF FRANKFORT-ON-THE-MAIN.

BUSINESS SITUATION.

Nothing occurred during the year which might have intimidated or seriously impeded the full display of business activity. Constant fears of war ruled the minds of men during 1887, while confidence in peace was but little disturbed in 1888; and, considering the great difference between the two years, it is but natural to expect that the business of the year just closed did improve upon the one preceding it.

The conservative and cautious movements of German business men preclude the possibility of sudden ups and downs, as well as the fast accumulation of wealth. Gradual enlargement of their business, step by step, and moderate gains will satisfy them, if chances for the better are too risking, and thus it may be said that the business results of the year, on the whole, were satisfactory. Peace and confidence in the continuance thereof exerted their beneficial influences upon commerce and trade, whose movements were normal and undisturbed, perhaps more so than during the five years preceding. Numerous establishments, favored by peculiar privileges or advantages, have doubtlessly made large profits, while others, bound to struggle to the utmost with competitors, will have to be satisfied with margins, narrow indeed.

Germany's business relations appear to be healthy, and Government and people shrink from no effort to have them remain so, and to make their commercial position among nations correspond with the greatness of the Empire, necessity bidding German people to extend and augment their trade and to secure foreign markets for the exchange of products of their surplus labor, which, as it were, forms a prominent part of their national resources.

Judging from the steady industrial and commercial progress during the last decade, it is fair to assume that the German Government and people are determined to meet the exigencies of the situation. To encourage industrial pursuits and foreign trade colonies have been founded, steam-ship lines to the coast of Africa subsidized, export premiums and drawbacks allowed, the consular system is being widened and extended, and the organization of German chambers of commerce in foreign countries contemplated. German banks are being established at home and in China for trade purposes with that Empire. To cheapen freight and to facilitate shipments inland canals and water-courses are being built, rivers made navigable, merchant marine augmented.

Moneys have been plenty during the year, and low interest has prevailed. Low prices of commodities continued during the year, unless they were artificially raised by means of syndicates and combines.

Expectations to realize higher prices and to expand the values of commodities by speculative agencies were only realized, if at all, in rare cases. The working forces of the country are so productive that, to avoid overproduction and stagnation, the prices of products must be such as will enable people to acquire and receive them.

Prices of bread and breadstuffs have risen during the last five months, while the price of other kinds of food and necessaries of life have not materially changed.

Labor was well employed at common rates of wages. Strikes and frictions between employers and employés were not of frequent occurrence. With the exception of a largely reduced grain crop and extremely poor vintage results the year 1888 turned out well, and has given to the German people little cause for dissatisfaction and complaint.

The social conditions and prosperity of the greater mass of people has not materially improved during the year, nor is there any good reason for thinking changes for the better imminent. Amid the seemingly prosperous condition of general trade the poor man's social position shows no change for the better, unless the system of accident, old age, and invalid insurance be regarded as such. But what strikes me as strange is that, good as times may be, working-men at the year's end are where they were when it began. Increased prices to manufacturers for their products is not followed by increase of wages to laborers, and the increased cost of working-men's necessities seems to put them in a more deplorable position than ever. The constant division of property and small estates of those in society's middle classes, and the crushing out of small concerns by combinations of large ones, is constantly

recruiting the laboring classes and flinging into them an element of enlightened discontent that may one day churn or lift it into protest. The gap between the rich and poor is growing greater—the rich growing richer, the poor poorer, when not stationary.

TRADE PER CAPITA IN EUROPE.

Holland leads the world in the amount of business done per capita of population. The average business done by the Dutch amounts to $197.34 per annum; Switzerland comes next, but far behind, with $99.45; then England, $82.09; while Germany and France do a business of only $19.50 for each man, woman, and child inside their boundaries.

EXPORTS TO THE UNITED STATES.

The total value of German products and industries exported to the United States from the district of the consulate-general at Frankfort-on-the-Main, including the districts of the consulates of Aix-la-Chapelle, Barmen, Crefeld, Düsseldorf, Elberfeld, Frankfort, Cologne, Kehl, Mannheim, Mayence, Munich, Nuremberg, Sonneberg, and Stuttgart, during the four quarters of the year 1888 was $38,764,751.25, and in the year 1887 it was $42,785,689.44, showing a decrease in 1888, as compared with 1887, of $4,020,938.19.

In the foregoing exports to the United States the following goods show a decrease as compared with the year 1887:

Articles.	Decrease.	Articles.	Decrease.
Braids, bindings, and trimmings	$340,000	Linen and woolen goods	$300,000
Buttons and button stuffs	130,000	Mineral water	125,000
Corsets	200,000	Silk, silk goods	900,000
Hops	300,000	Steel (manufactured) and bessemer	180,000
Iron-ware, steel, and cutlery	3,000,000	Wine, beer, and liquor	100,000

Of exportations for 1888, as compared with 1887, the following articles have increased:

Articles.	Increase.	Articles.	Increase.
Dyes and drugs	$522,000	Hair, prepared, and raw	$90,000
Fancy goods and toys	156,000	Leather, hides, and skins	180,000
Glass (plate, window, and mirror glass)	388,000	Machinery	40,000
Gold, silver, and metal paper	830,000	Prunes, dried fruits, nuts, land produce	58,000
Gloves	158,000	Baskets and basket-ware	35,000
Hatter's fur	50,000	Books, stationery, etc	60,000
Hat-bands and ribbons	180,000		

American imports from Germany of dyes, chemicals, and drugs and fancy goods have considerably increased, as they have steadily done from year to year. Gold, silver, and metal paper was exported to the United States to the amount of $891,000, against $40,000 in 1886 and $60,000 in 1887. The article in its present make is a specialty of old Nuremberg's inventive ingenuity and traditional art industry.

IMPORTS FROM THE UNITED STATES.

The imports of manufactured goods from the United States to Germany have largely decreased during the last ten or fifteen years, particularly since the introduction of a protective tariff in Germany. Agricultural machines, tools, and implements, heretofore imported by this country, are now being manufactured and sold here at lower prices than American manufacturers can furnish them with profit. The heavy increase of duty on grain could not fail to seriously affect the import of cereals, although Germany, in consequence of a heavy falling off in its grain crop, will have to increase its import of breadstuffs very considerably. Although it is generally admitted that some grades of American wheat surpass in quality all others, still the inferior qualities of other countries, because cheaper, largely affect the demand for the American article. Another factor, and perhaps more important than all others, is an indisposition on the part of German dealers to handle or touch American breadstuffs, because of the constant fluctuations affected by the widespread spirit of speculation. A guaranty of permanent fair prices would surely be rewarded by the reintroduction of American grains to almost every German grain market. The wheat fields of Russia and those of India owe much of their rapid development to a desire to shake off or get rid of the insecurity attendant at one time upon handling American wheat. Millions of dollars were spent in building railroads and assisting grain dealers in Russia and the East, many dollars of which had been spared had another spirit prevailed on our grain exchanges. "American grain is the best," says a leading German grain dealer; "we like it, want it, and are ready to buy it just as soon as we see our way safely towards getting it at fair prices, affected by the regular laws of supply and demand. So long as it remains the object of speculation we shall keep our eyes on India and towards Russia. Our millers and bakers prefer American grain, generally speaking, to all others. It is for your people to say how soon it shall be used here in larger quantities."

THE GERMAN HARVEST OF 1888.

Germany's harvests in 1888 were unsatisfactory, owing to the cold, dreary, and rainy weather during July and August. Their crops of spring wheat and rye were 20 per cent., summer barley 8 per cent., potatoes and peas 18 per cent., below average, and of inferior quality. Hops yielded not much over half a crop, while oats gave out well. Fodder and vegetables turned out good, and fruit in abundance. The yield of pears, apples, plums, and prunes was extraordinarily large, and compensated somewhat for the heavy falling off in the grain crop. The sugar-beet crop was less than in the preceding year.

Vintage. — The preceding two years were bad ones for the wine-growers in Germany, and so was the year 1888. Sixty days' continuous rain and dismal weather during July and August had retarded the growth and development of the grapes so much that the remaining days of summer and sunshine were powerless to ripen them into maturity. The year's product was large

in quantity, but so inferior in quality that only by the adding of sugar could it be transformed into wine and made salable. Prices of the products were, of course, very low, and after three annual failures in succession many of that class of smaller producers who are almost wholly dependent upon the proceeds of their vintage crop were enormously crippled if not ruined.

TOBACCO HARVEST.

There were 180,046 cultivators of tobacco in the German Empire during the year 1887–'88; 256,773 plantations, covering 21,465 hectares (1 hectare = 2.471 acres), were cultivated. There resulted 9,154,432 pounds. The average price per 230 pounds was $16.47. Compared with 1887, 1888 had 3,331 more planters, 9,998 more plantations, and an increase in yield of 5,250,440 pounds; and 1,622 hectares marked the amount of increase in territory under cultivation. There was, in 1888, a decrease in the average per hectare of 90 pounds and a decrease in price of $2.19 on every 220 pounds of ripe tobacco harvested. The number of those cultivating tobacco on less than 1 are, or 119.6 square yards, of soil decreased from 91,741 in 1887 to 87,801 in 1888, whereas the number of the large planters—those cultivating more than 10 are—increased. There were 2,047 planters cultivating more than 1 hectare, against 1,962 during 1887. Of the total harvest of 1888, 152,774 double centners (double centner = 220 pounds) came from the grand duchy of Baden, 110,712 from Prussia (Brandenburger province, 39,177; Pomerania, 21,098; Hanover, 13,088; West Prussia, 11,873; Rheinland, 10,379); Bavaria contributed 50,456, Alsace and Lorraine 14,218, the grand duchy of Hesse 6,064 double centners. Hopes are entertained that a new process, by which the once useless stems, stalks, little leaves, and bad tobacco may be made useful by being converted into a safe and efficacious insect destroyer on plants and animals, may find the same favor here as it has found in Russia, where the Government has allowed that all tobacco used in producing the valuable extract, and for which there are already enormous demands being made by farmers, be exempt from taxation of all kinds.

IRON AND STEEL.

The first nine months of the year's iron trade shows an increase over the same period of the year previous by 250,000 tons, it being 3,000,000 tons for 1888, against 2,750,000 for the first nine months of 1887. Business men seem very hopeful that present activity will continue, and some look forward to increased activity. Only 207,000 tons of bar and rail and 95,457 tons of pig-iron were exported. The Silesian iron-works produced in the neighborhood of 68,000 tons. During the first nine months of the present year the profits of one Silesian company were 907,235 marks (1 mark = 23.8 cents), against 470,754 marks for the period of 1887. It would appear that the German and English iron-masters understand each other and have agreed to hold off from each other's territory, for German furnaces and mills got from 114¼ marks to 121½ marks per 1,000 kilograms for rails in the contracts

lately awarded at Cologne, Berlin, Erfurt, and other cities. Steel is expected to take the place of iron whenever it is possible. Since steel rails were invented iron has been steadily giving away to the better metal. Bars, plates, and angles on ships, bridges, boilers, and all forms once made of structural iron are now being made from steel. Cast-steel is also taking the place of cast-iron and forgings. Forms so long made from wrought-iron at great cost and difficulty are now made with greater ease and less expense from cast-steel. Mild steel is even taking the place of iron on the anvil. The fears that steel would not weld, that it would burn by overheating, or be injured by being worked at the low or dangerous blue heat of steel, have disappeared. Welded steel pipes have been used successfully, and weldless solid drawn steel tubes have been used and have been found to stand vibration better than copper tubes or iron pipe. Solid cast-steel car-wheels are soon expected to replace the long-established chilled wheel, and solid cast-steel guns are expected to prove infinitely stronger and more endurable than those made of cast-iron, and will be much cheaper and quite as good as combination guns with a steel tube and wrought-iron jackets. Heavy percentages of manganese added to steel adds to strength and hardness, and has disclosed the fact that iron is helped in strength by the addition of small quantities of other elements as well as carbon. Chrome steel is also gaining in favor, and a cheap and very efficient steel for springs is being developed by the Siemens-Martin process.

Output of pig or raw iron of the (hoch) furnaces of Germany for 1887 and 1888.

Months.	Puddling-pig and spiegel iron.	Bessemer.	Thomas.	Foundry.	Total.
1888.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
January	177,321	31,213	102,779	35,649	346,962
February	169,882	27,628	101,435	39,896	338,841
March	176,618	34,781	104,592	43,781	359,772
April	180,615	28,094	98,293	42,878	349,880
May	173,535	35,361	108,248	43,711	360,855
June	172,889	33,952	102,594	40,969	350,404
July	177,320	34,095	100,216	42,480	354,111
August	173,441	37,707	99,104	43,752	354,004
September	172,028	34,745	102,900	44,139	353,812
October	164,963	36,080	111,562	49,401	362,006
November	166,222	29,802	108,788	43,139	343,971
Eleven months	1,904,834	363,458	1,140,511	469,795	3,874,618
1887.					
January	144,295	31,267	80,005	38,312	293,879
February	143,161	30,729	72,041	30,295	276,226
March	161,189	36,762	76,542	41,220	315,713
April	159,617	36,763	80,067	38,174	314,621
May	159,297	39,289	86,390	42,336	327,282
June	151,025	39,270	87,372	43,093	320,760
July	149,413	42,491	91,075	43,096	326,075
August	159,506	39,664	96,796	41,331	337,297
September	168,705	34,531	90,408	43,994	337,638
October	172,874	35,089	107,086	39,896	354,925
November	161,678	31,905	101,507	47,991	343,081
Eleven months	1,730,760	397,760	969,289	449,738	3,547,497

The following figures show prices per ton (2,240 pounds) at the works at the end of December, 1888, and 1887, respectively.

Articles.	1888.		1887.	
Spiegel iron (10 to 12 per cent. manganese)	$13.32 to $13.56		$11.90 to $12.13	
Bessemer iron	12.85		12.13	
Puddling iron	12.25		11.90	
Foundry iron:				
I	14.04	14.51	13.56	
II	13.32	13.56	12.85	
III	12.37	12.85	11.90	12.13
Bar iron	27.75	30.22	29.03	29.75
Boiler plate:				
I	40.46		38.08	
II	35.70		35.70	

At the close of 1887 the prices for iron had already risen somewhat.

TEXTILE INDUSTRIES.

An upward movement in the price of raw materials used in the textile industries is always looked upon as an indication of general prosperity. This is the view held by old and experienced economists. Rising prices were being reported on all sides as the last year was closing. So strong was the upward movement that manufacturers were caught in the current and raised the prices on manufactured articles, and large orders for new machinery to enable firms to meet the increased demand were reported. The outlook is one filled with hopeful pictures. Weavers of white cloths met in November at a central place in the Rhine country and voted an advance in prices of 5 per cent. The motion was voted for almost unanimously, only four small concerns opposing. A few days later the manufacturers of colored weavings held a meeting looking towards advancing their prices and interests; another such meeting was held in this city (Frankfort-on-the-Main). Similar meetings by all branches of the textile trade have been held. One meeting, that of the knitters of Leipsic, appointed a commission to inquire into charges made by dealers and the public that certain dealers break parcels and sell them smaller than when they came from the factory, etc., and that the quality of the goods has, of late, been much inferior to what it was formerly. Orders from the United States have been so pressing that difficulty was found in filling them in time; and so great was the pressure of demand at home and abroad that manufacturers were tempted to raise prices, did so, and got them, and are jubilant. Orders for gloves have been large and at good prices, mostly for silk gloves. It is feared, however, that the movement will be but temporary, and that the long-suffering glove trade must suffer still more. Tricot-makers report dull trade but big hopes, consequently they refuse to come down from present prices. The supply on hand is said to be small. Sales are very slow. Orders on hand are enough to just keep makers busy. The taste for novelties seems to have

subsided; some say it is satiated. Worsted goods men are hoping for an improvement. Trade in fancy articles was good, and large orders from the United States have produced pleasing effects. These supplemented by orders from other transoceanic countries, also England and European states, can not fail to make things lively in this profitable branch. A large part of these orders is taken up with silk jersey gloves and half-silk articles. Trade with Norway, Sweden, and South America is reported as satisfactory. Trade with the East is also brightening. The early part of the year's trade with England was good, the latter not so satisfactory. Trade in fancy woolen goods is improving. In spite of the duties, there is a good chance for dealers to get in here if they bring good material worked up well. Trade in woolens and buckskins closed steady, but great hopes were entertained that the spring of 1889 would give good returns. The manufacturers were busy with new designs, with which they hoped to catch an early and effect a lively trade. No effort is being spared to give German woolens a variety of style and excellence of finish that will drive popular goods, especially of England, out of the Empire.

CHEMICALS AND DRUGS.

The position held by Germany as one of if not the leading drug, chemical, and dye producing countries was maintained during the year just closed. The Germans' determination to study, investigate, and experiment, never asking "Will it pay?" usually results in very profitable developments. The system of technical education is such as to aid men pursuing special branches. A large part of the world's rich trade in drugs is conducted or controlled by Germans. Of course, competition, both here and abroad, has reduced the profits on staple products to fair, if not small, margins; but firms holding letters patent or exclusive rights to the manufacture of specialties still reap large harvests of gain. Such profits are a constant stimulant to inventive endeavor, and have thus far resulted in an experimental activity whose gains have been enormous. Establishments in or near this city have assumed proportions more than colossal. One firm, namely, the Baden Aniline Company, requires more water and gas for its immense works than a city of 65,000 inhabitants; its stocks are reported far above par, and its dividends are said to be simply enormous. The schools and universities enjoy a very high reputation in the matter of technical training in chemistry, a branch of the sciences upon which the drug, chemical, and dye trade is almost wholly dependent. Many young Americans are said to be here studying; hence the hope that the United States will soon have laboratories of its own, turning out men and work fully equal, if not superior, to those turned out and the work done here. There was an increase of $522,865 worth of drugs, dyes, etc., exported to the United States over 1887 from this district, viz, in 1887, $3,899,846.51; 1888, $4,422,711.55.

Quinine.—The rapid increase in the use of quinine makes that article one of the most profitable in the drug list. There were shipped of quinine barks

from Ceylon from October 1, 1887, to June 30, 1888, 8,715.237 pounds, against the previous season's 11,144,349 pounds, and 12,336,599 pounds in 1885–'86. In the world's markets quinine has gone down in price, in spite of the decrease in the amount of bark brought to the mills. The price of quinine sulphate per kilogram in the German markets was 58 marks in April and 45 marks in July; the price now obtainable is 46 marks (1 kilogram = 2.2 pounds; 1 mark = 23.8 cents). The present outlook for better trade is not good; besides, there is a reported overproduction. The full supply of Europe and America is put at 3,700,000 ounces, more than the world is likely to use in a year.

Anilines.—There was steady and good demand all the year for aniline dyes, the production of which increased. Prices were constant and profits large. There were increased exports of these dyes to all parts of the world.

RAILROADS.

Frankfort's event of greatest note, and one which excited wide-spread interest, was the opening of the new grand central depot, the largest depot in Europe, possibly in the world. It covers 31,284 square meters (1 square meter = $10\frac{9}{16}$ square feet). The next largest in order are Munich, 12,000 square meters smaller; Silesian depot, at Berlin, 12,100 square meters less; and London's St. Pancras, 15,500 square meters less. The new station lies fully a third of a mile further out than did the old ones whose places it has taken. All stood outside the Ring-strasse, a street running round the city, and built where once was the city walls. There is a tendency here to put depots on the city's outskirts and not crowd them into the center, where their soot, smoke, dirt, steam, and whistle-blowing and bell-ringing make them a general nuisance. Frankfort, since the building of her new harbor, connecting her directly with ports on the sea, and now her magnificent depot, is expecting a new lease of commercial life, whose profits will in some measure compensate for the losses consequent upon Paris, Vienna, and Berlin taking up a large share of the banking business which might have come here. The city's spirit of progress and enterprise, its determination to keep up with the times, give assurance of its maintaining its well-won influence in the world's markets.

Most of Germany's railroads are owned by the State, and those not owned are controlled by the Government in so far as to protect the public and business against extortionate rates for passenger or freight traffic. The Prussian State lines for the year 1887–'88 earned 733,628,453 marks, 50,332,837 marks more than for the year previous, and paid out 482,573,350 marks, leaving a surplus of 261,813,406 marks, or 50,664,104 marks more than for the previous twelve months. The Government has 5,980,306,676 marks sunk in its railroads. These have a length of 22,466 kilometers, an increase of 946 kilometers over the year before, 18,024 on principal lines and 4,656 on branches. Prussia has 2,132 depots, 30 in excess of last year; 718 stopping-off places, 94 more than the year before; and 523 places where trains stop upon signal.

Of the income 176,000,000 marks resulted from passenger and 473,000,000 marks from freight transport. The passenger receipts fell from 26.1 per cent. in 1886–'87 to 25.3 per cent. in 1887–'88, and the freight rose from 69.9 per cent. to 70.9 per cent. for the same period. During 1886–'87 191,600,000 people were carried; the year previous 176,000,000. Freight increased, exclusive of port goods, from 91,900,000 tons in 1886–'87 to 98,900,000 tons in 1887–'88. Much of this is due to the increased transportation of coal by rail, viz, from 46,600,000 tons in 1886–'87 to 49,800,000 tons in 1887–'88. The State (Prussia) controlled last year 8,618 locomotives, 13,503 cars or passenger wagons, 3,655 package, and 169,088 freight cars. Up to the first day of April, 1888, 19,675 more cars than were rendered inoperative were made and paid for out of the working capital at a cost of 103,300,000 marks. The average number of persons employed daily at the 254 railroad workshops of the State lines was 34,398, of which 25,449 were mechanics or artisans, 1,631 apprentices, and 7,318 otherwise employed. The total sum paid out to them in wages was 26,520,476 marks, or an average to each man employed in the shops of 770 marks per year, or $183.26, almost 50 cents a day. Connected with the railroad employés are 185 sick unions or funds, to which 269,206 members belong in good standing. Employés in the shops have a much larger percentage on the sick-list than do those employed on the trains, expressed by the figures 36.68 per cent., with a 6.14 days' average sickness, against 24.85 per cent., with average length of sickness 4.68 days for those on trains. The tendency here is towards State ownership and control of all the roads. The lines are noted for excellent service, regularity of trains, politeness of officials, cleanliness of cars, and general efficiency. The carriages are well built, excellently ventilated, cool in summer, and in winter heated by steam. The depots are models of architectural beauty and neatness, the railroads are heavy and solid, the officials are all skilled and well trained. They enter the service to make in it a career; employment is constant, and promotion depends upon efficiency. Every man, from president of the road to the humblest switchman, feels interest in his work, both because of promotion being the sure result of merit and because, in case of accident, sickness, or old age, he and his family are provided for by sick funds, insurances, and Government pensions.

RIVER NAVIGATION, CANALS, ETC.

Transportation by water, offering cheapness compared with rail rates, has never ceased to merit and obtain the widest possible attention, both on the part of Government and boards of trade. Germany's many rivers—the Rhine, Elbe, Oder, Weser, Spree, and Neckar, from Mannheim to Heilbron—and the numerous canals do a transport business only a little less in tonnage than the whole mercantile navy, expressed by the figures 1,242,000 tons, against 1,294,000 tons for the same year.

The following table shows how much several leading cities got by rail and by water:

Whence.	By water.	By rail.
	Tons.	*Tons.*
Berlin	3,348,000	3,504,000
Hamburg	3,221,000	1,191,000
Bremen	184,000	776,000

Mannheim and Ludwigshafen, cities connected by a bridge over the Rhine, received by water 2,041,000 tons and by rail 1,176,000 tons. Ruhrort, Dinsburg, and Hochfeld, ports on the Rhine, received by water 4,107,000 tons and by rail 5,427,000 tons.

THE WORLD'S SHIPPING.

Consequent upon a desire to increase her foreign trade and influence, Germany is struggling hard by private enterprise, backed by legislative encouragement, to lessen daily the difference that makes her rank after England, the United States, and Norway as a ship-owner. I have written somewhere else in this report about her effort to improve the Weser and other rivers, to build canals and open up the heart of the country to the sea by cheap artificial water-ways. Besides these efforts, there are others of seemingly greater magnitude. I refer to the contemplated establishment of direct lines of steam-ships from Hamburg to Calcutta, and of a line running at least five ships from Bremen to Calcutta and Bombay, besides steamers to the west coast of Spain. Behind individual effort stands the Government, backing earnest endeavor by just encouragement and building a naval force competent to defend that of her merchants. England ranks first as a ship-owning nation, then come the United States, Norway, Germany, France, Italy, Spain, Sweden, Russia, Netherlands, Austria, Greece, Denmark, Japan, Turkey, Brazil, Belgium, Portugal, China, in the order named. Since the invention of iron and steel ships the United States has shown a decrease of 6½ per cent. Norway runs third with a decrease last year of 4½ per cent., followed close by Germany, whose decrease was only 1½ per cent. Giving Germany credit for her large proportion of steam-vessels for foreign trade, and she takes Norway's place as No. 3, and possibly No. 2, that of our country. French tonnage decreased 6 per cent. in spite of bounties. Italy fluctuates between losses and gains; 1886 showed an increase, 1887 a decrease compared with 1888, of 1.2 to 3 per cent. Spain, Sweden, and Russia show an increase. The Netherlands have gone back 12 per cent., due to the rapid change from wood to steel and iron vessels; for the same reason Greece dropped 19 per cent. in two years and took rank 12 instead of 11. Austria, with an 11 per cent. decrease, took the rank vacated by Greece. Denmark's decrease was 5 per cent. Japan showed an increase from 1885 to 1887 of 32 vessels of 24,942 tons. Nearly all the vessels owned by Japan were built in Great Britain. Turkey and Brazil, it appears, have surpassed Japan in

1886–'87. Belgium's record shows an increase during 1886–'87, in spite of general depression; the same is true of China and Portugal. It remains only to call attention to the development of ship owning in the Argentine Republic and Uruguay, and to note the comparatively large decline in Mexico and Roumania.

It is unnecessary to say how important ship owning is as a factor in trade; but it should also be remembered that it helps to establish a nation's greatness. Any one familiar with the history of Spain, Portugal, Italy, and its republics, and remembers the important part they once played in human history and destiny, can not fail to have noticed that it was all very largely due to their ships and foreign trade. Venice, when her ships were everywhere, was mistress of many seas, queen of the Adriatic, and one of the most powerful nations in Europe; her capital, a city of palaces, inhabited by princes. Now her ships are gone, she is deserted, and shows no vestige of her power, and only melancholy remnants of departed splendor and greatness. The same is true of the others; but England, a little island, through her commerce rules an empire upon which the sun never sets.

The cities of Bremen and Hamburg, once free cities and doing business for themselves, and keeping statistics independent of the Empire, entered the zollverein last year and mingled their business and its statistics with that and those of all other cities.

THE WORLD'S COAL-FIELDS.

Whatever fears people may have held regarding a rapid exhaustion of the coal-fields of the United States, and a consequent destruction of the sources of supply, have been dissipated by some restless German digging out statistics covering this interesting question. The United States has no monopoly of this useful natural product. The Netherlands, Switzerland, Sweden, Denmark, Germany, Bohemia, Silesia, and Hanover have 59,000 square miles of coal deposits, Russia 22,000, and the island of Formosa 10,000. At Peking, in China, there are seams 95′ thick. Austria, Spain, southwest Poland, Portugal, Italy, Greece, Turkey, and Persia have, together, 39,000 square miles, India 35,000, China 400,000, and Japan 6,000. The Falkland Islands, Peru, and Patagonia have also vast coal-fields. The larger part of southern Chili is a coal bed. Brazil has wide extending coal beds, with seams varying from 17′ to 25′ in thickness. The Republic of Colombia has a cretaceous coal of fair quality and beds of bituminous coal far down under the surface. Mexico, Vancouver Island, and New South Wales (25,000 square miles) have deposits; so have Queensland, Western Australia, and Victoria; these three have 14,000 square miles among them. New Zealand has 29,000 square miles. Then there are fields in Tasmania, New Caledonia, Natal, Alaska, and other parts of the world, aggregating 100,000 square miles more. Those given do not include mines already opened, nor any coal lands in North America, except those of Alaska and Mexico, nor have we given, for we know not, what untold thousands of square miles may be hidden in the bosom of the Dark Continent.

Before what we do know of has been exhausted one hundred thousand centuries shall have run their courses.

BEER PRODUCTION.

Germany, including Bavaria and the provinces of Alsace and Lorraine, produced 45,000,000 hectoliters of beer, consumed in their manufacture 18,000,000 times 112 pounds of malt and 670,000 times 56 pounds of hops, and paid 35,000,000 times 40 cents, or $14,000,000, duty thereon. The German hop crop was almost half a million metric quintals (1 metric quintal = 220 pounds; 1 hectoliter = 26.417 gallons). Bavaria produced more than half of Germany's product. The amount consumed per capita differed in different parts of the Empire; the Bavarians drank 248 liters each, while the Würtemburgers, inhabitants of a neighboring province, drank 218 liters each. The citizens of Munich each drank an average of 400 liters a year. Austria produced in 2,000 breweries 14,000,000 hectoliters, and paid duty on $10,000,000, and consumed 3,300,000 times 220 pounds of malt and 100,000 times 220 pounds of hops. Great Britain, Belgium, France, Russia, Denmark, the Low Countries, Spain, Switzerland, Norway, Italy, Roumania, Servia, Greece, and America kept 51,000 breweries going, and turned out 175,000,000 times 22 gallons of beer, paid taxes on the same of various kinds amounting to $140,000,000, and used 67,000,000 times 220 pounds of malt and 2,000,000 times 110 pounds of hops. Three countries (Denmark, Sweden, and Switzerland) have no beer taxes. Great Britain leads all countries in the amount produced, leading even Germany. Great Britain brewed 47,000,000 hectoliters, Germany 45,000,000. Then came the United States, Belgium, and France, in the order named. The Belgians drank 150, British 125, Americans 53, Greeks 2½, and Roumanians 1, liters per capita, per annum.

ALCOHOL IN THE ARTS.

American capital has, for some time, been finding its way into German factories, where products requiring the use of alcohol seem to thrive better than with us. It is claimed that this is due to the absence of alcohol used in the arts and manufactures. The German law upon the matter is very simple. Alcohol used in the arts, in making vinegar for medical or scientific purposes, in cleaning, heating, polishing, cooking, and lighting pays no taxes; but the exemption is given only after the alcohol has been rendered unfit for drinking. The mold treatment, when found inexpedient for certain medical or manufacturing purposes, may be supplanted by a system of governmental supervision. Alcohol of less than 80 per cent. may not be treated, and not less than 100 liters at one time. The regulations are simple, and yet sufficient to prevent fraud. Various means are used in unfitting the alcohol for drinking, and are applied in factories under governmental supervision, are tested by Government chemists, and afterwards sealed with the governmental seal. The mixing may take place at a Government building, a factory, or wholesale house, etc., but always under the eye of the two Govern-

ment revenue officers, one of whom is usually of high rank. The officers hold office for life or during good behavior, are trained chemists, and work honestly in seeing that alcohol to drink pays taxes and that the other used in the arts, etc., goes free. Official lack of knowledge and inefficiency has never been reported, and official inspection is said to be very satisfactory. I have heard of no cases of fraud.

EXHIBITIONS.

The Germans never seem to get weary of exhibiting. From those exhibitions of international character to those of the village fairs and industrial schools, they are exhibiting all the time. To the "apostolic" labors of the "drummer," or commercial traveler, they add all forms of advertising and exhibits. Sample entrepôts, or permanent exhibitions, presenting elegant displays of wares with price-lists, are built up in large cities, and have been gaining fast in public favor. Transatlantic purchasers, hoping to combine a little pleasure with business, are thus enabled to see rapidly what otherwise under the old system took weeks. The first of these places was opened last year, in February, in Cologne, and embraced an exhibiting membership of 206 merchants and manufacturers, and was visited by merchants and their agents from almost every country on the globe. They came from England, Belgium, Holland, Switzerland, Denmark, Sweden, Italy, Portugal, Servia, Turkey, Roumania, Greece, the United States, Mexico, Chili, Peru, La Plata, the Cape, Morocco, India, Australia, and New Zealand. Many new connections were thereby formed, and so much interest awakened that catalogues in other than the German language were projected. Many exhibitions are announced for next year, but by far the most novel and interesting is one on a steam-ship specially constructed for such a purpose. The German Export Society, of Berlin, intends to "float" 5,000,000 marks, a little over $1,000,000, in a big "exhibit" ship. She is to be called *Kaiser Wilhelm*, will measure 570 feet long, 70 feet broad, and have a 45-foot depth; the ship alone will cost 3,000,000 marks. She is expected to be ready in the spring of next year (1890) and to make a tour of the world, stopping at every large city and exhibiting not only to buyers but to the general public. It is expected that she will make a trip every two years, and that increased demand must result by showing the people German wares and their prices. The sample stores and entrepôts mentioned above can never fill the place of exhibitions; their work has been satisfactory, but they wait for travelers. The very excitement consequent upon an "exhibit ship" arriving from a foreign country will bring out every man, woman, and child over ten years old from within 20 to 30 miles, and merchants and traders from a hundred miles, of the sea-port in which the ship docks herself or is anchored.

NEW LEGISLATION.

A new law on the taxation of sugar and sugar-beets went into effect August 1, 1888, by which the tax on beet-roots was reduced from 1.70 marks per 100 kilograms to 0.80 mark, and the drawbacks allowed were reduced from

17.25 marks per 100 kilograms to 8.50 marks. Consumption, too, was fixed 12 marks per 100 kilograms. It is estimated that this law will produce an annual revenue for the Government from ten to twelve million marks.

An important bill, defining and fixing the rights, powers, and liabilities of associations and incorporated companies, and of the members or shareholders thereof, is now under discussion in the Reichstag and is likely to pass before many weeks.

The old-age and invalid bill, a measure of a huge financial and social nature, the contents of which were fully described in my last year's report, is also now under deliberation in that body, and has fair prospects to become a law during the present session. In form and substance, however, the measure originally proposed will have to undergo important changes and modifications.

NAVY.

Now, after completion and perfection of the military organization, the navy department steps forth and urges its claim for an appropriation, in annual installments, of 27,000,000 marks, for the building of 4 iron-clad ships of war, 9 iron-clad corvets, 7 cruisers, 2 torpedo boats, and others, 27 in all. The first annual installment, and for the building of 4 war ships, has already been voted on and was agreed to.

The proposed enlargement of the navy must necessarily entail additional burdens upon the tax-payers, but the great majority of the German people seem to be in accord with the Government in a matter which tends to render the naval force of the Empire as formidable as the army.

COLONIAL POLICY.

Colonizing may be now looked upon as part of Germany's imperial policy. Vast tracts of land in Africa, ceded for fifty years by the Sultan of Zanzibar under contract to the German East African Company, have been placed under an imperial commission, and the Reichstag, while defining its position as one involving no responsibility for losses to those joining the company or investing money, has guarantied the safety of its citizens in colonial matters against encroachments or hostile actions of all other powers. The struggle of the natives against the colonists must be met by the colonizers themselves. The Government will not interfere, only with other powers, and promises no assistance from the navy, only such as provided for above to ward off attacks from other powers. The Government disclaimed any programme looking to the introduction and support of any form of state government, or to regulate the colonies by law and order corresponding to any form favored at home. Nor will the Empire set up a tribunal to administer justice. In conjunction with other states, however, especially in the decisions of the Congo conference, the Empire is ready to take an active part in the projected civilization of Africa and in destroying the slave trade. The Empire having taken possession of parts of the Dark Continent, considers it its duty to assist in putting down the slave trade. In conjunction with English, Italian, and Portuguese

ships, German vessels of war are engaged in keeping off agents selling weapons and ammunition, and in stopping the export of slaves. Paragraph 41 of the statutes of the East African Company provides that the company shall be placed under the oversight of the imperial chancellor, and according to section 42 the company's business will be conducted in accordance with legal provisions. It is found that a commissioner with large powers is needed in Africa, a man who will make it his business to know and examine into affairs and with authority superior, under certain conditions, to the company's powers. The powers once vested in the German consul-general at Zanzibar have proven insufficient and ineffectual. The imperial commission must have power to set aside the governing powers given by the Sultan to the company or its agents, or to demand such changes as he may deem necessary, besides a power to remove or transfer from post to post officers appointed and working in the company's interest, The State will not interfere with economic affairs, nor with fixing and collecting of duties. To cover costs attendant upon carrying out the Government's programme as sketched above 2,000,000 marks have been voted. This sum has nothing to do with the expenses attending the maneuvering of ships of war off the African coast. While the State has taken steps committing it more or less to a decided, if not very definite, support of a colonial policy besides that guarantied at the Congo conference, men and papers are discussing, as only Germans can, with a wide array of figures and statistics, the wisdom of following or even of engaging in such a policy. Of course, the main objects are, first, to find markets for surplus products and a place to receive the millions of hardy, rugged, skillful emigrants which follow fortune in the United States and other countries of North and South America.

Says a leading journal:

What does it profit us to seek or keep up trade with Africa? In 1887 we sent out goods worth 3,190,000,000 marks, as follows:

Whither.	Amount.	Whither.	Amount.
	Marks.		*Marks.*
Hamburg and Altona	708,300,000	Roumania	30,500,000
Great Britain	491,200,000	Spain	21,000,000
Austria-Hungary	303,800,000	Argentine Republic	20,700,000
The Netherlands	233,800,000	Brazil	15,800,000
The United States	231,300,000	China	14,300,000
France and Algeria	220,600,000	Egypt	9,200,000
Belgium	161,400,000	British India	7,200,000
Switzerland	157,800,000	Japan	6,400,000
Russia	131,500,000	Chili	6,400,000
Bremen	126,800,000	Dutch India	5,900,000
Scandinavia	118,000,000	Africa (outside of Algeria and Egypt)	3,900,000
Italy	108,100,000		

Of the millions sent to Hamburg and Bremen the most go to the United States and Great Britain in about the ratio expressed by the figures given above. Only one article goes to Africa in vast quantities, brandy in its different forms and qualities, and this only poisons the natives; also, some fire-water and powder. The natives get most, if not all, their cotton

goods from England. The part we are now being called upon to play will be played by a sacrifice of German blood and treasure with no compensating returns. As yet we have no *Ehrenpflichten* (honorable duty) to fulfill, since not the Empire, but the doubtful East African Company is engaged there. The step once taken that puts out money, a German imperial commission, and a naval force in Africa commits us to a policy of which the end is not visible.

The Reichstag seems to favor the colonial policy, and since 1871 nothing has so interested Germans as thoughts of a wide-extending empire, embracing some of the fabulously rich islands of the ocean and Eastern possessions. Even when the war closed men talked of wringing from France, as part of the war indemnity, some of her colonial possessions, and very many cities, towns, villages, and hamlets have had their colonial societies and bodies organized to encourage a colonial policy, and the richest wares in the village stores were known as "colonial wares."

TARIFF AND INCREASED COST OF LIVING.

Since my last annual report no legislation has been enacted changing the rates of import duties. A bill is now pending in the Reichstag proposing the establishment and organization of a national tariff commission, or tribunal, which shall have final jurisdiction in all matters relating to the tariff law and its applications. The measure is intended to secure a uniform interpretation of the laws levying duties, the want of which had caused considerable trouble and losses to importers on account of the differing views and varying decisions of customs officials in the different localities.

Mr. Bebel, a member of the Reichstag, has offered a resolution to remove the duties from breadstuffs, but it requires little sagacity to predict that it will find no favor with the majority of that body. The Agrarian party (so-called) claims that the land tillers are not, even at the present high rates of duties on grain, sufficiently protected, and that prices of their grain products were little better now than before levying the impost. The following extract from a speech by Mr. Bebel, in the Reichstag, will give an idea of how the grain tax has affected fully four-fifths of the Empire's population. Mr. Bebel said:

Through the tariff, as well as other laws, the condition of the working-man has been made worse. Through the measures of 1887 our grain duties have been made the highest in Europe. It was thought then that the time for setting those duties aside would come. That the duties affect prices can not be questioned in view of the fact that in the most remote corners of the Empire bread has become dearer. Naturally, some kind of a condition must arise to bring home to people the facts and make them notice the change in price. Last year's harvest was such an event; it made the people sensible of the fact that bread was dearer. By making inquiries among my friends as to what way the increase in price of bread and flour has affected or been felt by the people I received ninety-two answers to one hundred letters sent out. In eleven of these ninety-two places bread increased 1 pfennig per pound; in twenty-one, 1½ pfennigs; in twenty-nine, 2 pfennigs; in seventeen, 2½ pfennigs; in eleven, 3 pfennigs; and in three, 4 pfennigs on the pound. At the same time I made inquiries as to the average demand of different working-men's families. They differ much in amount, ranging from 4 to 9 pounds per week per head. The difference depends upon whether the family has a good dinner of, say, potatoes and vegetables, and whether at supper they eat potatoes as well as bread; whether they have children, and few or many; also the kind of work done. A tailor requires less bread than a blacksmith. According to my statistics the yearly increased cost of living of a working-man's family of four persons, caused by the increased cost of bread, at 1 pfennig a pound more, was yearly 15 marks and 20 pfennigs; six bread eaters, 21.32 marks; seven bread eaters, 22.87 marks. By an increase of 1½ pfennigs per pound, four persons, 23.23 marks; six persons, 35.10 marks; seven persons, 46.65 marks. An increase of 2 pfen-

nigs would result as follows: four persons, an increase of 30.76 marks; for six persons, an increase of 46.60 marks; for seven persons, an increase of 51.32 marks, and so on until a family of seven bread eaters, when the increase per pound has been 4 pfennigs, lose 85.50 marks per year. These estimates do not touch the breakfast, that so many working people eat away from the house, and the flour used for soups and for other purposes of cooking. It may be taken for granted that the increased prices cause a working-man a loss of between 12½ and 15 per cent. of his entire income.

Reports from the labor societies (and nowhere in the world are they better regulated or their statistics better gathered than in the German Empire) give the total average annual wages of a working-man as 618.75 marks; more than 50 per cent., however, get between 400 and 500 marks, and some—a large number—between 300 and 400 marks. The burdening of our working-men by the grain duties has become very pressing, and more so when it is noticed how the richer classes try every means in their power to relieve themselves of taxes. If an increase of taxes of 12½ to 15 per cent. came in I would like to hear what kind of a cry would be raised. It would be called political robbery—confiscation. Up to the present time I have not been able to see that the laborers' wages have been increased. A part, it is true, of the working-men get a little higher wages; the majority, however, lower wages. In statistics no notice is taken of those who get the smallest wages—those employed in the house industries, weavers, passementerie workers, and hosiery-makers—whose numbers are millions. These people need bread as well as potatoes. Now, some one will say the toll helps a good many citizens. It does not help the agricultural worker. I would gladly know if gentlemen can say whether the country is in a position to-day to pay higher wages than it paid six years ago; if so, it is to be attributed more to the economic law of supply and demand than to the duties. In the eastern provinces wages have increased, but because of a scarcity of laborers (many having emigrated). The average pay, even in Silesia, has been 1 mark per day; these are starvation wages. Even in the neighborhood of Berlin we find the same wages paid. For the most part the grain duties are paid by workmen, mechanics, officials, and teachers—four-fifths of the population. In the face of this situation the question arises whether the Reichstag is ready to answer for the effects of a continuance of the grain taxes. The removal of these duties would be not only an act of justice but of humanity.

HOUSE INDUSTRIES.

About 6½ per cent. of all the laborers in Germany are engaged in what are known as house industries (weaving, knitting, wood carving, etc.) at home in their own little rooms. This large part of the working population is almost entirely neglected, as far as any benefit from general legislation in regard to the working classes is concerned. According to statistical returns the number of those engaged in these industries averaged, during the years from 1882, some 476,080, of whom 128,071 were apprentices. These statistics are from those furnished by the workingmen's societies. The employers report 544,980 persons employed, of whom 150,523 were learners.

Occupation.	Workmen's returns.	Employers' returns.	Occupation.	Workmen's returns.	Employers' returns.
Stone and clay	3,170	7,661	Foods, etc	8,346	15,420
On metal	16,930	18,555	Making clothes	131,861	107,846
Machines, instruments, etc	4,489	5,939	Polygraphic work	739	845
Chemicals	171	2,567	Artistic work	785	94
Forestry, candle, etc	56	260	Other classes	27	35
Textiles	285,102	350,665	Total	476,080	544,980
Paper and leather	5,293	8,210			
Wood and carvings	19,111	26,883			

The house industries embrace fifty-six branches. The following table, taken from tables of employers, shows the number and kind of works that employ over 5,000:

Occupation.	No. of employers.	No. of employés.	Occupation.	No. of employers.	No. of employés.
Silk and velvet weaving	335	65,192	Suspenders, cravats, and gloves	702	12,359
Clothes making	2,423	62,479	Weaving and plaiting of straws, etc.	196	11,291
Weaving of mixtures, etc.	811	62,836	Springs, tools, etc	520	10,673
Linen weaving	1,069	53,446	Tailoring	1,832	8,892
Knitting, etc	1,281	47,136	Finishing of hosiery and laces	176	5,801
Woolen weaving	828	34,059	Turning of wood, etc	265	5,068
Cotton weaving	905	31,904	Finishing of laces and white goods	178	5,751
Passementerie	677	22,694			
Tobacco making	1,225	15,068			
Lace making	245	17,781			
Shoe making	1,612	15,363			

From the following the importance of the house industries may be seen, and their relation to all the industries of a given branch. Out of every hundred concerns engaged in the following industries the following percentage was employed in the house industries: Silk spinning, 95.2 per cent.; finishing of hosiery and knitted goods, 92 per cent.; silk weaving, 86.2 per cent.; cotton weaving, 82.6 per cent.; gold and silver wire drawing, 82 per cent.

The house industries have thriven, as all industries must, in the long run, where they found circumstances to their existence and permanency most favorable. The largest number are in Zwickau, a district of Saxony.

It is painful to know that these house industries, like the smaller industries, can not escape the absorbing tendencies of modern machine production. The process of annihilation is steadily going on, and one after another will have to succumb regardless of consequences. And just at the very hour of this writing, as if in verification thereof, the report comes from Düsseldorf and Crefeld, the very heart, as it were, of the house industries, that hundreds of people, where for hundreds of years their ancestors made a living at house weaving of silks or some form of domestic industry, are out of employment; villages are becoming almost deserted by the withdrawal of starving velvet weavers seeking work elsewhere. The greater part are compelled to sell out "their all" for what they can get, give up the habits of a life-time and those inherited from their fathers, and go into large factories to work. They have to labor for the lowest wages—not enough to live on, and too much to allow of starvation. A large number have gone to Bochum and Dortmund; they hope to find work in the coal mines. Recently efforts have been made to bring back strength to men who have long hungered, and who had grown weak. They were put at vegetable growing and vegetable gardening in general. They were assisted by various societies, and free lectures of an instructing character were given. In most cases this plan succeeded, but for many families it came too late; they were already broken up by death or emigration.

FOOD PRICES AND FOOD CONSUMPTION.

To judge a people's peculiarities, as well as to form an idea of their life's necessities, a review of their markets affords, perhaps, as easy, rapid, and sure a way as can be devised. Statistics play a very important part in helping to solve the most difficult social, political, and economic problems. If all the facts and figures are given, they tell a truthful story; if some are suppressed, more injury results than if none had been given. The following table is intended to review the amount of each article given used in Germany per capita during a series of years. For each person in the Empire there was consumed, per year—

Year.	Tobacco.	Salt.	Beer.	Coffee.	Sugar.	Tea.	Southern fruits.	Spices.	Rice.	Herrings.
	Kilos.	*Kilos.*	*Liters.**	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*	*Kilos.*
1871–'76	1.8	7.3	89.6	.....	.....	.....	.....	.....	.....	.....
1876–'81	1.7	7.7	87	.....	.....	.....	.....	.....	.....	.....
1881–'86	1.4	7.7	87	.....	.....	.....	.....	.....	.....	.....
1886–'87	1.5	7.7	94.6	.....	.....	.....	.....	.....	.....	.....
1836–'40	.....	.....	.....	1.01	0.01	0.004	0.06	0.05	0.18	1.10
1841–'45	.....	.....	.....	1.25	0.01	0.004	0.07	0.07	0.33	1.37
1846–'50	.....	.....	.....	1.34	0.02	0.01	0.06	0.07	0.43	1.36
1851–'55	.....	.....	.....	1.57	0.02	0.02	0.06	0.07	0.87	1.41
1856–'60	.....	.....	.....	1.79	0.02	0.02	0.07	0.08	0.99	1.36
1861–'65	.....	.....	.....	1.87	0.03	0.02	0.09	0.09	0.85	1.76
1865–'70	.....	.....	.....	2.20	0.03	0.02	0.10	0.09	1.11	2.02
1871–'75	.....	.....	.....	2.27	0.05	0.02	0.14	0.10	1.55	2.50
1876–'80	.....	.....	.....	2.33	0.05	0.03	0.18	0.12	1.66	2.38
1881–'85	.....	.....	.....	2.44	0.06	0.03	0.25	0.12	1.81	3.01
1886–'87	.....	.....	.....	2.41	0.09	0.04	0.34	0.13	1.66	3.57

*1 liter = 2.113 pints.

Average food prices, 1887–'88.

Articles.	1888.	1887.	Articles.	1888.	1887.
Wheat.....per 100 kilograms*...	$4.44	$4.23	Mutton.....per kilogram†...	$0.26	$0.25
Rye.....do.....	3.52	3.42	Pork.....do.....	.29	.27
Barley.....do.....	3.66	3.61	Wheat flour.....do.....	.08	.08
Oats.....do.....	3.41	3.09	Rye.....do.....	.06	.06
Hay.....do.....	1.76	1.46	Rye bread.....do.....	.05	.05
Straw.....do.....	1.25	1.13	Butter.....do.....	.46	.45
Potatoes.....do.....	1.23	1.28	Coffee.....do.....	.72	.72
Peas.....do.....	5.78	6.08	Eggs.....per ten...	.14	.14
Beans.....do.....	6.80	6.37	Milk.....per liter...	.04	.04
Beef.....per kilogram†...	.37	.29	Petroleum.....do.....	.05	.05
Veal.....do.....	.27	.25	Pit coal.....per ton...	4.15	4.10

*220 pounds. †2.205 pounds.

SUGAR TRUSTS.

The sad picture of the disappearance of small industries, their absorption by large ones, and the small wages paid to working-men is offset by the profitable results to the large combines. Take profits on sugar: Waghäusel, a factory whose huge dimensions and wonderful works attract strangers to

visit, has a capital of 4,714,285 marks, raises its own beets, and carries on considerable farming, pays 7 per cent.; Neustadt pays 6¾ per cent.; Tuchno, with a capital of 588,000 marks, debentures 510,000 marks, mortgage loan 300,000 marks, made a net profit of 195,907 marks; Kujaovien, with a capital of 900,000 marks, made 158,361 marks; Gross Gerau, with a capital of 530,000 marks, made 79,679 marks.

Of the refineries, that of Hildesheim declares a 60 per cent. dividend. These works went up in 1882–'83, cost 3,000,000 marks, and went into operation in October, 1883. Since that time 55,000 marks were spent in putting up new buildings. The working expenses since starting have been 11,450,000, marks, nearly three-fourths of which were spent in or near the village. The works employ 600 men, exclusive of clerks and officials, and pay an average wage of $200 per year (843 marks). The concern has paid 100 per cent., or 20 per cent. per annum in share capital. Some of the old houses have lost, but are seeking to guard against further losses by combining.

I have made the matter of conventions, "kartells," and combinations the subject of a special report, already forwarded to the Department.

GERMAN TRADE IN MEXICO AND JAPAN.

Mexico. — Germans, recognizing the natural resources of Mexico, the later-day liberal spirit that has opened up the country to emigrants and capitalists, and a praiseworthy desire on the part of its rulers to increase its commerce and manufactures, have turned wistful eyes towards our rich sister Republic beyond the Rio Grande. The year 1869 saw Mexico provided with one railroad, that from Vera Cruz to Mexico (414 kilometers), and 4,459 kilometers of telegraph wire (1 kilometer = 1,250 feet). Since 1875 the country has shown such remarkable development, and its wonderful resources becoming better known, it seems to be holding out inducements for Europeans to compete with citizens of the United States for as large a share as possible of its trade. The gigantic task accomplished by men from the States of joining its capital with the great railroads of the northern Republic has played a large part in Mexico's recent development. Mexico has 2,000,000 square kilometers of territory, twice as much as all France, and seems to invite Europeans to a climate less severe in winter and but little warmer in summer than that to which they have been long accustomed. This newly-awakened interest in Mexico illustrates the untiring energy and persistency with which Germans seek trade wherever a market seems possible.

Japan. — Germany's trade with Japan for 1888 reached 4,010,915 yen (a yen is 99.7 cents). This gives Germany the fourth place among the nations trading with Japan, having risen one step since 1887.

CO-OPERATION SOCIETIES.

I shall not take time to discuss the merits or demerits, success or failures of systems of co-operation, but an array of facts such as present themselves upon this subject may help our people to form some idea of its importance,

and to note its influence here. Less than fifty years ago co-operation was introduced into Germany. To-day there are 4,821 co-operation societies. Of these 2,200 are popular banks and loan societies, 827 are engaged in industrial (139) and agricultural (688) pursuits, 230 labor societies (2 industrial and 228 agricultural), 72 warehousing societies (64 industrial and 8 agricultural), 678 societies of production (146 industrial and 532 agricultural), 67 mutual assurance societies, 712 societies of consumption, who buy (cheaply), divide, and consume, and 35 building societies.

The popular banks have grown enormously during the last quarter of a century. In 1859 the banks giving returns had 18,676 members, in 1887 there were 456,276. In 1859 there were 80 banks, in 1887 there were 886. The advances made to members in 1859 amounted to 12,394,708 marks in 1887 to 1,601,857,197 marks. The capital of members in 1859 amounted to 7,380,073 marks, and in 1887 to 110,630,967 marks. The reserves and deposits show the enormous growth from 92,535 marks in 1859 to 24,244,992 marks in 1887, reserves, and from 3,042,435 marks of deposits in 1859, to 427,125,264 marks in 1887. To realize more fully what these huge sums mean, I shall quote from a Paris paper estimates of a similar character, but showing by comparison the business of popular banks compared with those of other nations.

The deposits stand for 886 returns from popular banks. The deposits of the people's banks in Germany, 534,000,000 francs (1 franc = 19.3 cents); the deposits of the Bank of France were only 852,570,000 francs, of the Bank of England 718,375,000 francs, of the Bank of Germany 525,000,000 francs; so that the popular banks of Germany, 886 out of 2,200, deposited more money than the bank of the Empire. Making a fair allowance on the average of the banks not reporting, the total popular bank deposits would exceed those of the Bank of England, and would—those of the 886 banks reporting—be greater than those made in the Bank of France, if the 365,000,000 of State funds are deducted, and the deposits of the 2,200 would be far in excess. In 1887 the people's banks advanced 500,000,000 marks, did a discount business of 788,000,000 marks, and of current accounts 600,000,000 marks. This business was confined to bank members—agricultural, 29.90 per cent.; small industries, 33.90 per cent.; large industries and commerce, 36.02 per cent.

If the returns made by certain consumption clubs or societies be taken as an average, the 712 such must have done a business of 172,000,000 marks. I have been able to read or learn nothing of the labor organizations, except that the one at Munich has assets amounting to 353,640 marks. The warehouse societies confine their work to towns, and are concerned with boots and shoes, coal, tailoring, pianos, etc. The producing societies, of which there are 522, are agricultural, and aid each other by purchasing farm necessities, especially manure, fertilizers, and large machines in common; some of them work in common in producing certain food supplies, especially dairy products. The insurance and building clubs and societies are still at work seeking, so far as intelligent co-operation will allow, to lift their members into a

position of greater self-dependence than was ever possible under the old system that once prevailed. These societies have come to stay; they do and have done good; they are a great help to large bodies of men, and they guard against the usury that once kept the poor man girded to a wheel of despair or rolling a rock up a hill whose summit was never attainable. The people's banks do a splendid work in aiding men to borrow at cheap rates from banks in which they themselves are members, rather than as formerly from usurers insisting upon the pound-of-flesh payment of the bond. These banks are found scattered all over the Empire, in a central village or town, and are recognized as people's friends.

EDUCATION.

Education remains, as it has always been, an important factor in this country's policies. The new spirit to get as much knowledge as possible of the wants of the outside world continues; languages are still being learned and consuls and young men fitted for trade with other people. An idea of the thoroughness of a German education may be gained from a few facts which I read somewhere a few days ago. A candidate for engineer honors must first take a full scientific course up to and through a gymnasium, a kind of high school. At eighteen or twenty he begins his special technical studies. If he expects to be an architect or civil engineer, he goes two years to a technical high school at Berlin, Hanover, or Aix-la-Chapelle, after which he goes under an examination in science, mathematics, and building construction. Then follow two years more and another examination; if successful, the candidate becomes a government assistant engineer, or assistant architect, and spends, without salary, a year in or on some Government work. Then he is again examined. He must work out an original design at home, and one under the eye of the examiner, consulting no books of reference. If successful, he goes up and gets the title of Government engineer.

Mechanical engineers have a different course. They go into an engineer's works for a year after leaving the high school; then they go two years to the technical high school, go through the preliminary examination, have two more years of hard study and practice and examination, two more years' practice, a year in which to prepare for final examination—eight years in all. At the end of this probation the candidate is employed and gets about $2 or $3 a day. After five years' labor he may get a permanent position. If skillful, however, and talented, he goes up and up, not by favor, but merit, and all in old age retire on a pension.

EMIGRATION.

Of the persons emigrating from Germany to the United States nine hundred out of every thousand are fitted to enter the various walks of active American life. Few emigrants—less than 15 per cent.—are under ten years; 65 per cent. are between twenty and fifty, but by far the larger part nearer twenty. The emigrants are, as a rule, strong, healthy, well trained, and in-

telligent. The thing they lack most is a knowledge of the English language. They have a good education, and one which has specially fitted them for that branch of business or labor in which they have been trained, and in which they usually continue when they go to the United States.

Of those emigrating factory operatives constitute 25 per cent., day laborers 12 per cent., small farmers 25 per cent., commercial men 10 per cent., skilled laborers, including professional men, 12 per cent., miners 6 per cent., and 10 per cent. with no definite trade or occupation make up every hundred that leave German ports for the United States. No artisans or tradesmen go to the United States except to stay there. Emigrants go out to better their condition and make the best possible use of their time and strength; not one in a dozen goes to the United States with any other idea. With the Germans their going is a voluntary act, a free choice. They know well just what they are doing, what to expect. They know before going, for they have been told, that they must work, and they are willing to, and do so. No golden visions haunt their healthy sleep, nor do they have day-dreams of fortunes made by doing nothing. They know that a competency in America, a living better than the one enjoyed in Germany, is to be purchased by hard labor. And they know also, for it has become a proverb here, that they must do almost twice the amount of work in a day in America as they have had exacted from them here. The land where "time is money" is known to them by letters and newspapers.

Germans become permanent residents. German emigrants—all classes, except, perhaps, a very few young men, who go to get our business methods—intend to stay; and many of the very few young men who go thinking to come back settle permanently in the United States. Emigrants go because they hope to better their condition, and the fact that they do go shows a superior amount of energy, determination, and self-reliance. The Government does not encourage emigration, but it does forbid agents to do so, or to mislead the people. Influencing people to go is a punishable offense in every state of the Empire. Thousands of young men annually fail to respond to the roll-call; they may be supposed to have emigrated to avoid military duty. The only inducements offered or assistance given are given by relatives already settled and doing well in the United States. There is every reason for believing, however, that societies do exist for helping or encouraging certain undesirable classes to go to the United States or other foreign parts. On the whole, German immigrants were always, are now, and always will be, so long as they preserve their race characteristics, a desirable class. They are, as a rule, honest, healthy, thrifty, intelligent, and of good habits. In an immigrant, what more to be desired? They always were and are to-day good citizens. Their faults they have in common with other men. Being intelligent they naturally prefer the United States to all other countries; educated, they know a good deal of its history, its tendencies, and what it offers. If some have gone southward to the lower half of the continent, it was because efforts were made to direct the stream from the United States,

where it was entirely lost to the old land, and turn it into parts where assimilation is almost impossible; but these efforts at diversion have failed. The emigrant of to-day looks upon the United States as no El Dorado, but as the best country under heaven for a man or family willing to work, and Germans are workers.

JACOB MUELLER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Frankfort-on-the-Main, January 31, 1889.

AGRICULTURE IN YORKSHIRE.

REPORT BY CONSUL WIGFALL, OF LEEDS.

As regards the cultivation of the earth, Yorkshire has a very composite industry, including nearly every branch of occupation belonging to the land. Cattle and horse raising, the breeding of sheep and swine, the production of wool, wheat, oats, rye, barley, and divers root crops, the growing of fruits, such as apples, pears, cherries, etc., with berries of various kinds, the care of nursery and market gardens, with hay and cheese and butter making, are among the more important employments.

BRITISH CEREAL SUPPLY.

As will be seen, the following statistics show the imports of cereal produce into the United Kingdom during the first forty-three weeks of the season compared with last season:

Imports.

Kinds.	1888–'89.	1887–'88.
	Cwts.	*Cwts.*
Wheat	56,496,899	38,296,070
Barley	16,499,890	16,853,041
Oats	13,152,017	14,195,916
Peas	1,639,584	2,668,225
Beans	2,725,105	2,307,884
Maize	24,912,452	19,208,374
Flour	11,770,045	15,035,425

Supplies available in forty-three weeks, exclusive of supplies on September 1.

Supplies.	1888–'89.	1887–'88.
	Cwts.	*Cwts.*
Imports of wheat	56,496,899	38,296,070
Imports of flour	11,770,045	15,035,425
Sales of home-grown produce	31,657,143	34,461,234
Total	99,924,087	87,792,729

The average price of home-grown wheat for the season of 1888–'89 was 30*s.* 11*d.* per quarter; in 1887–'88, 30*s.* 6*d.*

WHEAT GROWING IN YORKSHIRE.

I annex a report showing the indications this year, accompanied by details of interest relating to the wheat crop of the past thirty-one years, by Mr. Dickson, whose farm in Heslington lies near York and in the East Riding, some 30 or 40 miles in a northeasterly direction from Leeds.

The intermittent sunshine and warm nights have had an important effect in improving and bringing forward the crops of this country. The harvest of this year promises, with the present state of the weather, to be earlier than the average of the last thirty years, the shooting of the ear having taken place this year on the 12th of June. We are enabled to give to our readers, thanks to the courtesy of Mr. F. Dickson, of Heslington, the following information, the result of thirty years' observations, from his diaries on the same farm, of wheat shooting the ear clear of the blade, and the time of commencing and finishing the harvests during the whole period:

Year.	Time of shooting the ear.	Time of ripening.	Close of harvest.	Yield.	Price of wheat per quarter.
				Average.	*s.* *d.*
1858	June 9	July 31	Sept. 9	Over	44 2
1859	...do	Aug. 4	Aug. 27	Under	43 9
1860	June 7	Sept. 12	Oct. 3	Much under	53 3
1861	June 14	Aug. 13	Sept. 12	.....do	55 4
1862	...do	Aug. 21	Sept. 18	Average	55 5
1863	June 10	Aug. 8	Sept. 12	Over	44 9
1864	June 14	Aug. 11	Sept. 27	.....do	40 2
1865	...do	Aug. 2	Sept. 5	.....do	41 10
1866	June 15	Aug. 13	Sept. 21	Under	49 11
1867	June 13	Aug. 21	Sept. 18	Much under	64 5
1868	June 5	July 25	Aug. 18	.....do	63 9
1869	June 26	Aug. 14	Sept. 8	Under	48 2
1870	June 14	Aug. 1	Aug. 24	Over	46 10
1871	June 21	Aug. 14	Sept. 13	Under	56 8
1872	June 20	Aug. 15	Sept. 21	Much under	57 0
1873	...do	Aug. 12	Sept. 12	.....do	58 8
1874	June 12	Aug. 6	Aug. 31	Over	55 10
1875	June 11	Aug. 11	Sept. 10	Much under	45 2
1876	June 19	...do	Sept. 5	Under	46 2
1877	June 25	Aug. 25	Sept. 27	Much under	56 9
1878	June 18	Aug. 12	Sept. 9	Over	44 0
1879	June 8	Sept. 8	Oct. 13	Very much under	43 10
1880	June 21	Aug. 21	Oct. 15	Under	44 4
1881	June 20	Aug. 15	Oct. 1	.....do	47 0
1882	June 13	...do	Sept. 27	.....do	46 4
1883	June 21	Aug. 23	Oct. 2	.....do	43 2
1884	June 12	Aug. 9	Aug. 27	.....do	37 11
1885	June 25	Aug. 24	Sept. 21	.....do	33 2
1886	June 1	Aug. 30	Sept. 23	.....do	31 1
1887	June 20	Aug. 6	Aug. 25	Over	35 1
1888	...do	Sept. 5	Oct. 10	Under	32 3
1889	June 12				

The wheat area is said to have been greatly decreasing of late years in England at large, grazing to a considerable extent taking its place. Much attention has been naturally drawn to so important a change, and it may readily serve to form a subject for many and varied comments. It seems hardly probable, however, that a simple industry like this, having once proven

unprofitable after a long reign of usefulness, will ever be restored to its former status.

THE HARVEST OF 1889.

The last monthly report of the Leeds chamber of commerce notes the weather and its influence upon the corn markets, and adds that business in wheat has been very limited. Barley, oats, and beans are called in steady demand, with little fluctuation in value, and the flour trade fair at lowering prices.

At Tadcaster, in the Wharfe Valley, between Leeds and York, hay-making was reported beginning on June 4, and was then expected to be general within a week or ten days thereafter if the weather continued favorable. Such has been the case, and, indeed, throughout the Kingdom dry days, with warm sunshine, have prevailed, and the hay harvest in England is one of the largest and best which has been gathered for years.

The following extract from the Yorkshire Post of June 24, 1889, gives a semi-official view of the outlook:

From information which has come into the hands of the agricultural department of the privy council, but which has not yet been published, it seems clear that the farmers are likely to have a really splendid year. In many counties the hay harvest is already practically over, a magnificent breadth having been secured, while the corn crops are making rapid and sturdy growth. Even the root crops, which are often not good in a favorable wheat year, have been provided for by the abundant rain-fall of the early spring. Unless something very extraordinary happens the farmers ought to do well this year.

FRUIT GROWING IN ENGLAND.

There is, even in England, and more particularly, perhaps, in Scotland, already some tendency on the part of farmers to wish for rain; but the fault is in this climate a gracious one, and one seldom to be seriously feared.

It is said that fifty years ago there were probably not more than from 90,000 to 100,000 acres of fruit land in Great Britain. In 1872, the date of the first reliable record, it had increased to nearly 170,000 acres, and Mr. Whitehead, a well-known authority, estimates the present acreage at about 214,000 acres, showing an advance in amount under this particular cultivation of something like 120 per cent.

In this connection I submit an editorial article from the Yorkshire Post of recent date representing current views upon the fruit growing question in its larger aspects:

"A great deal of nonsense has been written about fruit and fruit growing lately by those who absurdly exaggerate the profits to be derived from this source and recommend it as a panacea for agricultural depression, and by some, on the other hand, who take a gloomy view of British fruit growing, and altogether underrate its importance, and deny that it can be further developed." So says Mr. Charles Whitehead, one of the advisers of the agricultural department of the privy council. "One of the principal reasons," says Mr. Whitehead, "why fruit growing is not made to pay as it might is that orchards are not replanted as they ought to be, but trees long past their prime have been allowed to stand overgrown with mosses and lichens, and crowded with boughs and branches; no manure has been applied to the roots of the apple-trees, or, if manure has been used, bushes have been allowed to grow at the roots of the

fruit trees, and have received most of the benefit of the manure. Cherry growers in Kent have discovered that their orchards require manure from time to time, and they now supply it, and this applies to other fruit orchards. Not only do apple and pear trees require this assistance, but it has been found," says Mr. Whitehead, "that the progress of canker is stayed by plentiful manurings, and other disorders to which fruit trees are liable are checked by liberal treatment. There is an increased demand for English fruits of good quality, and farmers are beginning to pay more attention to the replenishing of their orchards with young trees of a good class; and in districts suitable for apple and pear culture they see a prospect of a return, eventually, larger than can be obtained from ordinary crops. Where fruit trees are planted on grass land there is a certain yield from the grass before the trees begin to bear, and where fruit bushes are planted among the trees there will be an early and perhaps considerable return. Landlords in some cases have afforded facilities to their tenants for planting fruit trees, and the efforts of Lord Sudeley in the way of encouraging the cultivation of fruit in Gloucestershire are spoken of in high terms of praise."

Not only has Lord Sudeley encouraged his own tenants, but he has set an example to others, and his own plantations and orchards are described as being model fruit farms, "planted with the best varieties, selected judiciously, managed in the most approved manner as to science and practice, and, it is believed, yielding a satisfactory profit." As to the manner of stocking orchards, Mr. Whitehead mentions with commendation the plan of placing standard trees 30 feet apart, and dwarf trees planted under them at the rate of about eleven hundred trees per acre. This would require a great outlay, but there would be a quick return from the dwarf trees. In six or seven years it would be necessary to take away the dwarfs immediately under the standards, so as to leave the small trees 12 feet apart, which could be removed to form part of another plantation. It is asserted that a return of £120 per acre would be made from such a plantation. This might be done in exceptional circumstances, but such an estimate can not be accepted as representing annual average returns. Still, Mr. Whitehead holds that, taking an average of years, land planted in this way pays a fair profit, if the trees are well selected and planted and well cultivated, and this system, he is assured, would be found profitable by small cultivators. The making of jam Mr. Whitehead does not look to, as some other great authorities seem to do, as the pursuit to which the British farmer should turn his undivided attention, but he does say that the demand for it has enormously increased, and the jam, preserve, and essence-making industry is now of much importance and will yet have a far wider development. In some branches it is only in its infancy. As to the distribution of fruit, Mr. Whitehead points out that the markets have opened up and developed, but much yet requires to be done to avoid what is still sometimes seen—consumers paying exorbitantly high prices for fruit in certain districts, while producers can hardly find a channel through which to dispose of their crops at a fair price. Railways have done much to develop fruit farming, but the difference between the rates for home-grown and foreign fruits handicaps the former. But even with the present condition of markets and freights Mr. Whitehead holds that "there are many hundreds of acres of lands in this country which would give a substantial profit if judiciously planted with fruit trees and fruit bushes, and properly managed in all details."

STOCK BUILDINGS, AND CATTLE FEEDING.

I subjoin an interesting article from the agricultural correspondent of the Yorkshire Post, which treats specially of stock buildings and the feeding of cattle:

The somewhat unusual advantage which we have had during the past winter of visiting a very large number of farms in Yorkshire, and in every particular part of that county, has enabled us to see the style of buildings, with the variety of appliances which are used in connection with stock feeding; and our recent visit to the southwest of Scotland induces us to make some comparison between the buildings which are adopted in the two districts, both of

which are inhabited by farmers of the highest possible intelligence, and who, in stock matters, are certainly not to be excelled by any other members of their class in the British Islands. We may remark that the cattle kept in the southwest of Scotland are principally Ayreshires — animals of small size, but of great economical value — whereas in Yorkshire we saw little or nothing but the shorthorns and grades or cross-breds of various types, which are indebted to this noble breed for what little quality they possess. In too many instances, however, these cross-breds were small, badly formed, and very third-rate in quality. It is a noticeable fact that upon the best farms in all parts of the country a great improvement may be seen in the style of building adopted for cattle, as well as in the arrangement of the stables; the mangers, the gutters, and the passages of these departments are conducive either to the comfort of the stock or economy of management, and are worthy of notice. The prevailing cattle-house upon the Scotch farms is a broad, roomy building, with a concrete or fire-brick-paved passage down the center. On either side of this passage or gangway are "grips" or gutters, generally from 1 foot to 16 inches in width and some 6 inches in depth, water-tight, square, and fitted with drains at the ends for the removal of the liquid manure. This drain, communicating with a central cess-pool or tank, into which the whole of the liquid manure from the farm is conveyed. The cattle-stall itself is invariably short, from 5 to 6 feet from the edge of the gutter to the front of the manger. The longest, standing from the gutter to the wall, including the width of the manger, was 7 feet. The stalls are usually paved, in some instances they were pitched with stones, but as a rule, either plain red bricks or channeled fire-bricks were used. It is very questionable whether beaten earth will not answer the purpose better, the only difficulty being that a depression is gradually made in the earth by the fore-feet of the cattle, which has occasionally to be filled up. We remember no instance in which the mangers were other than oval in shape, 1 foot wide by 2 feet in length, and composed of hardware, a foot between each of these small mangers being cemented brick-work. In these mangers the cooked food, cake, or meal is placed. There is no rack for hay or straw, which is placed between the cattle, but it was remarked by those whom we asked upon this point that there is no waste, the cows clearing it all up, and seldom or never treading any under foot. Whether a rack overhead is more advantageous is for those to determine who have tried both systems, but we are inclined to place faith in the Scotch system, inasmuch as from their extreme thriftiness and care in management if the rack were really necessary we believe it would undoubtedly have been adopted. The mangers are seldom higher than 6 inches above the floor, hence the cleanliness of the cattle, which, whatever their size, have plenty of room to stand upright and similar room when lying down, inasmuch as the head has plenty of scope over the manger. It is evident that where a stall is long the cattle, whether lying or standing, are apt to drop their manure upon it, and consequently to lie in it and soil their quarters. When it is short almost all the manure falls within the gutter. The divisions between the standings are generally short and made of wood. Sometimes an iron post is used. A pair of posts stands between each division, and these are joined by a ring to an upright iron staple which gives them plenty of play.

In Yorkshire we noticed a variety of mangers and of stalls. First came similar mangers to those we have described; next, what we believe to be still better, were continuous semi-circular mangers of Stafford-ware, running like a huge gutter from one end of the building to the other. The advantage of this is that when the cattle have finished feeding water can be turned on at one end and the manger flushed, providing a drink and at the same time cleaning it out. Again, on some of the best Yorkshire model farms a third receptacle was placed between each pair of cattle, this containing water, a tap being suspended above it. This plan certainly entails some trouble, as each tap has to be turned on twice or thrice daily. This work could be obviated by the employment of a general tap, but even then water poured into a series of small mangers is liable to become stagnant, unless it is regularly cleared out, which would entail considerable labor. Some farmers prefer to turn their cattle out to drink, that they may at the same time get exercise, in midwinter. This is a very necessary feature, but it may be continued whether a continuous manger and inside watering is adopted or not. Again, in Yorkshire, we observed

wooden mangers, which should be cleared out of every cattle-house. They harbor filth, taint the food, can not be thoroughly flushed and cleaned, and are generally objectionable. In other cases flagged food receptacles were built upon the floor. These are shallow and much inferior to the hardware mangers. Sometimes they were built at least 2 to 2½ feet high, entailing the use of longer standings to afford ample room for the cattle when lying down. Lastly, we noticed, in some parts of the country, that the floor was bricked, and that absolutely no manger or rack was used at all, the food being placed upon the ground in front of the cattle, and, as we learned, was thoroughly cleaned up. Surely this plan can not be recommended.

It is important that where racks are used there should also be a manger beneath, so that the seeds falling from the hay may be caught and not wasted. The continuous stone manger is, therefore, valuable from this point of view. In some instances the racks slope forward over the heads of the cattle, being erect behind; in others they were perpendicular in front and loose behind, being opened out when filled and shut up when empty. In all these cases there was a passage behind these stalls or in front of the heads of the cattle. The Scotch object to these passages, as they occupy too much room, but there is manifestly considerable advantage in employing them, especially where they are sufficiently wide for a barrow or tram-car to pass them.

Whether dry food is mixed, as in Yorkshire, or cooked food and water, as in Scotland, it is evident that a feeder can fill the mangers of the cattle much more rapidly by passing down in front of their heads with a tram-car than by wheeling it down behind them and carrying each lot from the barrow to the manger instead of putting it in with a shovel.

We have mentioned one method of tying up the beasts; two or three others may be named. In one a horizontal staple is fixed in front of the manger, the ring fastened to the chain sliding upon it. This prevents the cattle getting too near to each other.

In Yorkshire we noticed that some of the beasts, especially fat beasts, were fastened by a chain with a large ring at the end, which slid up and down a wooden pole, while in other districts each animal is fixed by passing its head between two upright poles, one of which is loose, but which is slid sufficently close to the other and fastened to prevent it getting out. This is a very old plan, and although not absolutely bad it is inferior to the plan adopted by the Scotch, which is also found in some parts of Yorkshire. In future papers we will refer to other features in connection with agricultural buildings which we have observed in different parts of the country.

PRICES OF CATTLE.

The annexed paragraphs give some prices for cattle realized June 22, 1889, at Boroughbridge and at Horncastle June fair.

Boroughbridge-Barnaby Cattle and Pleasure Fair.—This fair was held on Saturday. There was a good show of cattle, most of which were offered for sale on the open space known as the Chapel Hill. First-class bullocks made from £18 to £22; good, strong, second-class bullocks, £14 to £18 10s.; and one-year-olds, from £7 to £8. Grazing heifers made from £7 to £9. Calving beasts were a fair show, best class rates making from £18 to £22, and second-raters from £16 to £18. There was very little young stock shown, and the prices obtained were about the average. Irish beasts were a moderate show, and sold at from £10 to £16 apiece. There was a good attendance of buyers and dealers, and a good many animals were bought up by them.

Horncastle June Fair.—This fair was continued on Saturday, but it was a very small and insignificant affair as compared with previous years. Owing to the abundance of keep, farmers are not disposed to part with either the beasts or sheep they have on hand. The show of beasts was tolerably good, most of the large dealers of the district being represented, while of sheep there was a small show. The beast trade was slow at the following prices: Good three-year-old bullocks, £18 to £21 10s.; two-year-old bullocks, £16 to £18; good drapes, £13 to £18; yearling beasts, £13 to £14; and cows with calves, from £20 to £22. Mr. John

Walter sold by auction several young pedigree bulls, which averaged £17 each. In the sheep department fat ewes made £3 each, while in store sheep prices were slightly under current market rates. There were a few horses of the inferior class on sale and a fair share of Welsh ponies.

ENGLISH HORSES FOR THE UNITED STATES.

From time to time shipments of horses to the United States are made, as for example see the accompanying notice, dated June 28, 1889:

Mr. Lucas, a well-known horse dealer from Iowa, U. S. A., has recently been on a visit to Spalding to purchase young shire stallions. He will return in a day or two with twenty fine yearlings and two-year-olds, all bred in the Fens, which he has purchased at prices ranging from £35 to £85 each. He says nowhere in England can he obtain draught horses equal to the Fen breed for bone and muscle, and he fully believes in the claim of Fen breeders that the soil contains an unusual proportion of phosphates, and is therefore peculiarly adapted for producing the qualities mentioned. Mr. Lucas also takes with him eight of the celebrated Percheron breed of French draught horses.

I may add that declaration was made at this consulate last week for a considerable lot of horses and ponies collected from different parts of England and Scotland, and shipped from Liverpool for breeding purposes. Forty-seven was the number, I think, of all kinds included in the invoice which was intended for a live stock company in Indiana.

PLEURO-PNEUMONIA.

Pleuro-pneumonia is announced in Yorkshire and Leicestershire within the last few days, but prompt measures are reported as being taken with the disease, and it is to be hoped that its ravages will be confined within narrow limits.

I append some clippings giving details and exhibiting the zeal with which the authorities encounter the approach of such disorders and the energy employed in checking their speed. Dates of publication, June 24 to July 1, 1889.

SERIOUS OUTBREAK OF PLEURO-PNEUMONIA IN LEICESTERSHIRE.

No fewer than sixty-five head of valuable cows have been ordered to be destroyed by the executive committee of the Leicestershire county council in consequence of outbreaks of pleuro-pneumonia. The order will be carried out to-day. The disease has manifested itself on three farms, and all stock which have been near the afflicted animals will be destroyed and buried in lime with the view of stamping out the disease.

PLEURO-PNEUMONIA IN YORKSHIRE.

After prolonged immunity from the ravages of this disease an outbreak has unfortunately occurred on a farm near Hellifield, which has been associated with the same scourge in previous years. The farm is situated at High Ground, near Hellifield, and is occupied by Mr. John Coates. Four beasts were attacked, and the authorities, adopting prompt measures with a view to the curtailment of the malady, had the animals slaughtered immediately. A meeting of the subcommittee, under the contagious diseases (animals) act, is to be held at Settle to-day for the purpose of defining an infected area. These precautions, it is hoped, will have the effect of preventing the further spread of the fatal disease.

A LADY FARMER HEAVILY FINED.

Mrs. Elizabeth Nettleton Bennett, a large farmer at Soothill, has been fined £10 and costs by the Dewsbury West Riding justices for not reporting to the police that on the 9th ultimo she had a cow on her premises suffering from pleuro-pneumonia. Mrs. Bennett had the cow killed after it had been ill a few days, and endeavored to sell the carcass to a butcher, but he declined to buy. The lungs of the animal beginning to smell, she had them and the entrails buried in her garden. Another butcher was brought to see the carcass, but he also would have nothing to do with it. The magistrates considered the case a very bad one, and warned the defendant that if she was brought up again the full penalty would be imposed. Mrs. Bennett kept a number of dairy cows, all of which have been slaughtered, and the place declared an infected area.

DONCASTER SWINE FEVER.

On Saturday Superintendent Blake reported to the magistrates at Doncaster the existence of swine fever on the premises of Mr. William Baddiley, farmer, Hatfield. He found seven pigs affected and one dead. It was thought that the disease had been introduced by a sow which came from the neighborhood of Sheffield about a month ago.

I annex the last report which I have come upon for the week ending June 22, 1889, giving general statistics under the contagious diseases (animals) act, 1878:

Under this act Captain Russell, chief constable of the West Riding, gives the following statistics in his return for the week ending Saturday, June 22, 1889: Number remaining diseased on Saturday the 15th of June: Sheep-scab, 68 sheep; swine fever, 20 swine. Number attacked by disease during the week: Rabies, 1 dog; pleuro-pneumonia, 1 beast; swine fever, 22 swine. Number killed during week by inspector: Rabies, 1 dog. Number killed during week by order of owner: Pleuro-pneumonia, 1 beast; swine fever, 6 swine. Number which have died during week: Swine fever, 11 swine. Number which have recovered during week: Sheep-scab, 15 sheep; swine fever, 4 swine. Total number of animals remaining diseased on Saturday the 22d of June: Sheep-scab, 53 sheep; swine fever, 21 swine.

F. H. WIGFALL,
Consul.

UNITED STATES CONSULATE,
Leeds, July 2, 1889.

AGRICULTURE IN ONTARIO.

REPORT BY VICE-CONSUL HIRSCHFELDER, OF TORONTO.

Statistics as to the condition of crops for the district of Toronto are favorable for a good average yield in cereals. Hay will be above the average, small fruits below, such as grapes and strawberries, and the larger fruits, apples, pears, etc., considerably below the average.

THE WEATHER.

The weather has been quite phenomenal the past spring, the season opening very early with little rain and unusually warm. In the month of March the rain-fall was 0.72 and April 1.92 inches. April is usually the rainy month here, but this year the rainy season did not commence till near the end of May, and there was then incessant rain for six weeks, which completely inundated low land and did much harm.

The average temperature for March was 31° and April 43.83°, and for the same months the previous six years 22.30°, and 43.83°, respectively.

A heavy frost in June did much harm, especially to small fruits and vegetables, grapes being completely ruined, which crop, however, is an unimportant one in this district.

The black-knot is destroying plum and cherry trees, and baffles the endeavors of the farmers to kill it out.

ENSILAGE.

Owing to the prolonged drought of the past two summers and the discussion of the fodder question at many farmers' institutes and similar gatherings it seems likely that the ensilage method will get a trial this year, especially in the eastern section, where dairying is the most productive farm industry, and where the effects of drought have been most severely felt. Wherever ensiled fodder has been given a fair trial the reports show that it has been almost invariably successful. A farmer in this district writes: "Ensilage is something for the future; farmers have not yet taken hold of it in this section, although they are reading and thinking and asking opinions concerning it. I think that if they could be led to see its advantage they might well abandon turnip growing."

The bureau of industries, referring to "provisions against drought," says:

Grain for green fodder has been very generally and extensively sown this year, although it appears at present to have been a somewhat unnecessary precaution. It is feared in many cases that the crop will prove to be a complete failure, owing to the unfavorable season. In a few instances farmers postponed sowing until late in June, while in others the land has been replowed and turnips sown instead. It is unfortunate that the corn crop has been so unsuccessful this season, especially as the area planted is so much more extensive than formerly. There appears to be a decided impression that the silo will come into very general use before long. The chief difficulty is to get some one in each locality with enterprise enough to give ensilage a full trial, for which many seem anxiously waiting.

THE GRAIN APHIS.

The same bureau has a report on the "Grain Aphis," forwarded by Professor Panton, of the Agricultural College, Guelph, which may prove of interest to the American agriculturist:

The insect belongs to the family *Aphidæ*. The species infecting the ear is *Siphonophora avenæ*, or grain aphis. It must not be confounded with the so-called wheat weevil, which is an entirely different insect, belonging to the order *Diptera*. These tiny aphidai live upon the sap of the plant, and, unless in large numbers, are not likely to prove very injurious. They have many enemies, and are usually kept under by parasites. I think the wheat is too far advanced now to be much affected, for they can not obtain sustenance much longer. [This report of Professor Panton's was written in July.]

Some species of this family affect plants in the green-house, but are easily kept under by smoking them from time to time. Some affect turnips, and in that case the application of a coal-oil emulsion proves successful; but a remedy for grain fields, I think, has not yet been discovered. Some have dusted the young plants with lime in case of an early attack, and obtained satisfactory results. Any dressing which is likely to increase the vigor of a plant

will prove beneficial by enabling it to overcome the attack upon its vital forces; but where this insect has not appeared until late in the season I am inclined to think the attack will not be followed by serious results.

Some of the principal characteristics of the plant lice are as follows: They are found upon almost all parts of plants, and there is scarcely a plant which does not harbor some peculiar to itself. They are exceedingly prolific, and it often happens that a plant will be covered with them. They are usually wingless, consisting of the young and the females only. The winged forms appear only at particular seasons, usually autumn, but sometimes in the spring, and these are small males and large females. After pairing the females lay eggs upon or near the parts likely to be affected, and then, together with the males, die. The body of the insect is about the size of a pin-head, oval, soft, usually greenish, and furnished at the hinder extremity with two little tubes, horns, or pores, from which exude almost constantly minute drops of a sweet fluid. Their beaks are long and tubular, and are used to suck the juice from plants affected by them. The winged forms, usually seen at the close of the season, provide for a succession of the race by laying eggs in the autumn, from which arise a series of generations that give birth to living young, all of which are wingless females, and all in a condition to perpetuate the species. Here you observe a strange phase in insect life — young produced from eggs, and these producing living young, several generations, until the season advances, when eggs are laid again. They have many enemies, among others the little beetle known as lady-birds and the lace-winged flies, and hence are pretty well kept down.

AGRICULTURAL LABOR AND WAGES.

The reports regarding the labor supply for spring work vary considerably, but in all ordinary cases the supply, such as it is, is quite sufficient. The extended use of labor-saving machinery and the increased skill of the farmers themselves have contributed to this end, for, from all over the province come reports that the supply of skilled labor has been reduced by the extraordinary exodus of laborers to Manitoba and the Northwest. In the lumbering districts the supply is always limited, as only those farmers are served who can offer the laborer some sufficiently strong inducement to leave the higher wages and more varied employment of the lumberman. In some of the southwestern counties a scarcity has been created by an increased demand for laborers for railway construction. The complaints as to the unskillfulness of laborers, especially of the immigrant class, and scarcity of domestic servants seem to increase from year to year. The engagement of laborers without board is uncommon, but where so engaged a free house is usually included. As will be seen from the following figures wages have varied little from last year: Wages of laborers per month, with board, in 1889, $16.58; in 1888, $16.73; without board, in 1889, $23.98; in 1888, $24.11.

Of 595 correspondents reporting on labor to the bureau of industries 472 say that the supply is sufficient and 123 that it is scarce.

For the above information I am indebted to the bureau of industries for the Province of Ontario.

HARVEST PROSPECTS.

Fall wheat. — There is much uniformity in the reports in the various districts regarding this crop. The injury from spring frosts is comparatively small, while damage from water on low-lying fields has been great. The

crop gives a magnificent promise on uplands; in fact, already complaints are being made of "lodging," owing to the unusual growth. Rust is also feared, owing to the rains and rank growth, but, taken altogether, the crop promises an average in yield. A grain insect, which seems to be a stranger to our correspondents, has appeared in several counties on Lake Erie and Lake Huron, districts to which special reference was made in a previous paragraph.

Spring wheat.—There has been more spring wheat sown in this district than for some years. On high and rolling land spring wheat presents a fine appearance, and a good yield is anticipated; but the heavy rains have greatly affected the crops in the low-lying districts.

Barley.—There has not been so much barley sown in this district as last year, and has been damaged more than any of the other crops by the wet, cold weather, much of it on low, undrained land having been drowned out.

Oats.—There are good prospects for a large yield, this crop having stood the wet weather better than any other grains.

Peas.—On high and well-drained lands the fields present a magnificent appearance, and, if the vines do not run too much to straw, there will be an immense yield. Serious damage, however, has been done this crop by water on low spots.

Corn.—The prospects are exceedingly poor for corn. The frost was severe in its injuries to the tender blade, and the rain rotted much of the seed later on. Some correspondents report a total failure and all the rest a partial failure.

Hay and clover.—The late frosts gave a set-back to this crop, both timothy and clover having been nipped in several counties, but timely rain saved the yield. Clover is in a more promising condition than timothy, and while old meadows are rather poor new ones are in first-class condition. With favorable weather for cutting the hay crop generally gives promise of being rather above the average.

Root crops.—Early planted fields of potatoes were cut down by frost and much of the seed has rotted, necessitating a good deal of replanting. A good yield is looked for on high lands, but on low-lying fields the reverse is expected. It was difficult to put in carrots, turnips, and mangels at the right time, owing to frequent rains. All are in a backward condition; while carrots and mangels are beginning to look well turnips are being attacked by the fly in some counties in the east.

Fruits.—Frost in the latter part of May caught the orchards in blossom, and the result was a wholesale destruction of fruit. Apples have suffered terribly. In many orchards an apple is hard to find; in others there is as high as half a crop, but in no sections is there a full yield. The Northern Spy is especially mentioned as having escaped severe injury. Pears, plums, cherries, and peaches were also injured in the blossom. Grapes fell an easy prey to frost. While in a few favored situations the vines escaped injury, the general record is one of complete loss of the first bud. In some instances the wood was killed to the earth, but as a rule the second bud has started,

although only in rare cases will there be a maturing of the fruit this season unless a long, warm autumn ensues. The vines will feel the check for two years to come. Small fruits generally were more or less injured by frost. Strawberries were only about half a crop, and currents also gave a light yield. Raspberries, however, promise well.

The foregoing particulars as to crop prospects, which are mainly taken from the provincial bureau of industries' bulletin for July, cover really the best part of the Province of Ontario, but in all cases I have carefully given the outlook for this district as nearly as could be ascertained.

C. A. HIRSCHFELDER,
Vice-Consul.

UNITED STATES CONSULATE,
Toronto, July 12, 1889.

TEXTILE INDUSTRIES OF THE DISTRICT OF CHEMNITZ.

REPORT BY CONSULAR CLERK HAUSMANN.

[Extract translation of the annual report of the chamber of commerce of Chemnitz for 1888.]

SPINNING.

Cotton spinning.— The principal movement affecting the methods of production that has taken place in cotton spinning during the year 1888 has been the unusually great expenditures of the spinning-mills in the way of replacing old machinery and erecting new plants and buildings. In thirty-five establishments the number of spindles was increased by 97,313.

On the whole, the condition of the cotton-spinning industry of Saxony has been satisfactory during the past year. Business was especially lively in weaving yarns, while of hosiery yarns, sales were encouraging during the entire year, though at depressed prices. The price of the best grade of cotton for hosiery yarn has advanced considerably in consequence of the poor quality of the American cotton crop, and this increased cost of raw materials the spinners have been unable to realize on their yarn. A stagnant hosiery market, as well as competition with the poorer grades of yarn manufactured in South Germany, has tended to depress the spinning business, especially the trade in double-twist yarns, which has only during the last quarter begun to liven.

The prices of yarn have been steady. By reason of the late picking of the cotton crop in the United States the visible cotton supply grew short and advanced from 3 to 4 pfennigs per kilogram during last autumn. Those spinners who allowed their supply to run out were forced to purchase cotton at high figures during last September and October without being able to realize a corresponding advance on their yarns. It now seems that even the enormous American cotton crop of 7,000,028 bales will not be sufficient to supply the demand.

The greatest obstacle in the way of the constantly developing German cotton-spinning industry is the lack of an independent German cotton market. At present German spinners are, for the most part, dependent on direct importations of cotton from America and India, and have no certainty of obtaining those qualities which they desire and need; indeed, they are often compelled through competition to engage from houses which offer no kind of guaranty of delivering what they contract for. All attempts to hold such firms liable in the American or Indian courts have been utterly futile—a mere source of annoyance and expense. This direct importation requires a large amount of capital, which could be more advantageously employed in other directions, and involves great risk of consequential loss, inasmuch as the American shipper handles the cotton in an absolutely inexcusable manner. Ship-owners, as well as insurance companies, always decline to assume the liability for damage resulting from

this careless handling, and the American shipper excuses himself by stating that he is a mere commission merchant, if, indeed, he considers complaints worthy of a reply after having received his pay. Notwithstanding the efforts of all the German spinning unions, as well as of the cotton exchange and board of trade of Bremen, to establish a cotton market for Germany, Austria, Russia, and Switzerland, in Bremen, nothing has yet been accomplished in that direction.

High prices of coal have increased the cost of production of all kinds of yarn. Wages have risen, and female laborers are scarce. Many laborers have come here from other districts, but the wages have experienced no diminution thereby.

Raw cotton.—The following table will show the amount of cotton received at Chemnitz during 1888 and the corresponding period of 1887:

Month.	1888.	1887.
	Kilograms	*Kilograms.*
January	407,480	342,600
February	191,740	385,970
March	258,890	404,600
April	543,860	388,310
May	601,110	721,000
June	689,330	606,230
July	340,640	381,550
August	360,220	231,080
September	388,290	251,270
October	267,540	291,030
November	719,530	565,220
December	601,500	582,180
Total for year	5,370,130	5,151,040
Increase	219,090	.....

Cotton-thread spinning.—Those difficulties which have heretofore impeded the revival of the sewing-thread industry of Germany have for the most part been overcome by the persistent efforts of the German manufacturers, aided by the favorable state of the market for raw materials, and it is not unlikely that in time foreign competition will be more and more driven out of German markets. The territory supplied is constantly growing, while the effects of foreign competition are gradually diminishing. The export of sewing-thread has increased somewhat, which fact has caused several manufacturers to enlarge their establishments.

Wages have undergone little change, and the laborers, who are mostly women, are now in receipt of sufficient compensation to enable them to live comfortably.

Rope making.—Small producers of fine grades of rope have been driven from the markets by the large manufacturing establishments. During the summer of 1888 the unprecedentedly low rate of exchange on Russia enabled the German rope-makers to purchase hemp there at favorable figures. The production of cotton belting and connection ropes, which formerly yielded a slight margin, has ceased to be profitable in consequence of the multiplication and expansion of the establishments. Exporters are now the chief purchasers of rope, and use it merely for packing purposes.

Good laborers are scarce, especially in the summer, and receive an average of about 12 marks per week, with board. There are few apprentices employed in this trade.

Worsted yarn spinning.—During the past year the business in this line was satisfactory in so far that there was no lack of speedy sales. There were times when a temporary stagnation of trade seemed imminent, as the prospect of poor spring trade in consequence of the long and severe winter, and subsequently the tardiness of export orders, especially from the United States, where the preparations for a Presidential election absorbed all attention; but nevertheless by indefatigable efforts the highly developed worsted industry succeeded in securing ready sales for all its products.

Prices of raw wool, as well as of finished spun goods, varied but slightly, and the year closed at somewhat higher quotations than it opened. The stormy fluctuations of preceding years have apparently disappeared, and the opinion seems justified that steady prices will continue.

At the opening of the London February sales the quotations on raw wool remained the same as at the preceding December sales, but soon declined about 5 per cent., and so continued during the April sales. At the June sales the tendency was upward, and in September prices advanced from 5 to 10 per cent. A still further advance was followed by a slight decline, and the year closed at September figures, Australian wool being rated at 5 per cent. more than at the beginning of the year.

These fluctuations of the prices of raw wool were closely followed by the yarn prices, though advances were at times somewhat tardy. The year closed at rates corresponding to the higher prices of wool.

Wages have been uniform, and the number of laborers employed in this line is unchanged. This industry has suffered much through the introduction of the Antwerp system of futures, whereby legitimate trade is discouraged and speculation causes fluctuations in direct conflict with the actual condition of the business, tending to prevent the healthy development of the industry.

The spinners of Germany, Austria, and Switzerland have now united to introduce uniform methods and conditions of payment.

Carded wool spinning.— Business in this line remained practically unchanged during the past year. Sales of threaded yarns for fancy goods, hosiery, and dress goods were quite brisk, as also for knit and other plain goods.

While sales were ready, and it was not necessary to work on stock, business was less profitable on account of increased cost of carding without a corresponding advance in the price of yarn. The large increase of new machines of great productive capacity during recent years has caused such surplus of yarns to be spun as to render profitable sales impossible.

Though many of the home establishments are now able to compete with the Belgian manufacturers, and in point of quality even surpass them, large quantities of Belgian yarns still fill the German market, and being of inferior material, though well spun, are sold at prices below the cost of production here.

Wages, especially of female laborers, are constantly advancing, and correspondingly increase the cost of production.

Knitting-wool spinning.— The demand for knitting-wool was sufficient to keep all factories running, and the products found ready sale. Prices, however, were so much depressed that few manufacturers realized any profit.

Flax-spinning.— Taken all in all the condition of the flax-spinning industry at the close of the year 1888 may be called satisfactory. Prices of tow yarn advanced slightly in the spring, then steadily declined, and dropped below even the figures of the preceding year. Flax yarn quotations tended downward throughout the year, but were somewhat steadier at the close. Compared with the preceding year, the prices of tow yarn show a general falling off of 3 per cent., those of flax yarns of 8 per cent. This decline, however, was more than equalized by the unusually low cost of raw material, which, in consequence of the large Russian crop in 1887 and the low rate of exchange on that country, was fully 10 per cent. below the prices of the preceding year. Only because of these exceptionally low prices of raw material was it possible to realize a profit after the seemingly disastrous decline of yarn prices.

The Russian flax yield of 1888 not having been satisfactory, prospects for 1889 are not favorable. England, France, and Belgium report short flax crops, and this increased demand will greatly raise the prices in Russia. The crop in Germany is below the average, and the quality inferior. As raw material will cost fully 10 per cent. more than in the preceding year, the result will be disastrous unless the prices of the finished products advance more than can be anticipated.

In 1888 the German flax spinners petitioned the Imperial Government to increase the import duty on flax yarns, but in view of the profitable business of the past year the petition is likely to remain ineffectual.

The following figures from one of the largest flax-spinning establishments will show the general condition of the industry: In 1888 this establishment hackled 14,963 cwt. flax, as against 14,319 cwt. in 1887; spun 5,808 cwt. hackled flax, as against 5,675 cwt. in 1887; spun 11,376 cwt. tow, as against 10,510 cwt. in 1887; and produced therefrom 5,814 shock flax yarns, as against 5,577 shock in 1887; 6,386 shock tow yarns, as against 6,038 shock in 1887; 12,200 shock total products, as against 11,615 shock in 1887. Twelve thousand six hundred and forty-three shock tow and flax yarns were bleached, as against 12,874 shock in 1887, and 633 shock bleached yarns were exported as against 566 shock in 1887.

Wages were somewhat higher than in 1887. In consequence of many laborers seeking other lines of occupation it was necessary to introduce an unusual number of workmen from abroad. The total amount expended for wages and salaries was 217,366 marks 30 pfennigs, as against 210,239 marks 50 pfennigs in 1887, which was paid to 497 workmen, against 465 in in 1887. The amounts contributed to the sick fund aggregated 1,829 marks 85 pfennigs.

Dress, upholstery, and furnishing goods.—As heretofore, the principal articles woven in Chemnitz have been furniture stuffs, curtains, and table covers made out of cotton, wool, cotton and jute mixed, cotton and linen mixed, cotton mixed with wool and linen, cotton mixed with wool and silk, wool and cotton mixed. The articles most in demand were highly colored cotton, cotton and jute, and cotton and wool mixed upholstery goods and portières.

Concerning furniture stuffs in particular, it may be remarked that the demand for fancy articles is declining, while the popular taste seems to be tending towards solid colors. Fancy colors are now made in quantity only in curtains fit to order to match with less gaudily colored furniture stuffs.

Competition in this line is constantly growing sharper, the expenses of securing larger sales are increasing, and the margin of profit is gradually narrowing. On the other hand the political situation, contrary to expectations, was favorable and tended to strengthen the trade.

Prices of raw materials varied: Carded wool yarns showed a slight advance, while cotton yarns tended upwards throughout the year, as did also English wool yarns, though in a less degree. Jute yarns advanced excessively and promise to rise still more. Silk reached a low figure, but has recently improved considerably.

The markets supplied are about the same as before. Exporting to the United States is constantly becoming more difficult because of the great development of American industries.

Wages have remained unchanged. There is a great lack of skilled and experienced laborers. By their frequent transition from one branch of the weaving industry to another, workmen place themselves as well as their employers at a disadvantage when competing with the highly skilled and poorly paid labor of Belgium and France in the export trade.

The manufacture of furniture stuffs, table covers, and curtains was fairly profitable during the past year, for though war rumors made purchasers nervous in the early part of the year sales were subsequently uniform and speedy.

However, the tendency throughout was to obtain goods at the lowest figures possible, and, as many of the smaller manufacturers met this demand by using inferior material, prices were depressed and a general depreciation of quality brought about, which can only impair the reputation of the goods abroad, and has already resulted in a greatly diminished demand for fancy articles.

As the popular desire for handsome interior decorations of residences is constantly increasing, the manufacture of curtains and portières matched and made to order is replacing the production of piece-goods. Not only have prices been seriously depressed, but profits have been further abridged by the ceaseless demand for novelties which occasions great expense in designing and in samples. Jute yarn has advanced enormously and cotton yarn has steadily risen, while manufacturers have been unable to obtain an equivalent advance on their profits. The jute spinners, as well as the cotton spinners of Germany, have entered into a combination

and maintain such quotations as to seriously imperil the ability of the weavers to successfully compete with foreign manufacturers in the export trade. Russia and Belgium no longer afford a market, while export to Italy, Austria, and the United States is constantly becoming more difficult, because of the rapidly developing industries and high tariffs of these countries. Recently a large factory has been established in Denmark, which promises soon to monopolize Danish markets.

German manufacturers themselves bear much of the blame that their goods are not exported in as large quantities as formerly, for they willingly receive young foreigners into their business and give them a technical training. Even the weaving and industrial schools operate to the detriment of home industry in this, that for a nominal tuition they give foreigners a technical education and acquaint them with all the methods and secrets of the trade, while the expenses of maintaining these schools are borne by the tax-payers.

The sick and emergency fund system which has been introduced at most factories has been productive of beneficent results to the laboring classes.

Concerning the manufacture of half-silk dress goods, it may be stated that the prices of the finished products continued to decline until near the close of 1888, when the manufacturers formed a combination for higher prices, and by taking low-grade goods out of the market and by other measures succeeded in securing a material advance. Whether or not they will be able to maintain their figures is open to question.

In consequence of the long winter the trade in umbrella stuffs was dragging during the early portion of the past year, but beginning with July it livened up considerably, especially in the export line. Raw materials have cost from 5 to 10 per cent. more than heretofore, while the prices of finished fabrics have remained practically unchanged.

No alterations have occurred in tariff or wages, and good laborers are always in demand.

Glauchau.—Though there was no lack of employment during the past year the weaving business was far from being satisfactory. Prices were depressed in all markets, and the great expenses occasioned by designing and samples to meet the ever-changing whims of fashion still further curtailed the profits of the manufacturer. There was at no time an urgent demand for goods, and the ease with which all orders were filled, as well as the willingness of manufacturers to sell on almost any terms offered, served only to discourage the trade.

The home markets, together with England and the United States, continue to be the leading purchasers of Glauchau woven goods. Inland trade suffered greatly by reason of unfavorable weather during the spring, and continued dull throughout the year. There was an increased export to England, while trade with the United States has slightly declined in consequence of the growing ability of American manufacturers to compete in staple goods and fabrics for which the yarns are produced at home. No material change is reported in the trade with Holland, South America, Scandinavia, etc. Exports to Italy were inconsiderable, and those to Austria are constantly becoming of less importance in consequence of the high tariff and the rapidly developing home industries. For similar reasons exports to Russia have practically ceased.

The supply of labor was sufficient. Wages of mechanical weavers remained unchanged, but those of hand-weavers declined in consequence of irregular employment.

Carded and combed yarns were used extensively, fancy yarns and silks much less than heretofore. English worsted yarns and cotton yarns are no longer made use of. Prices of carded yarns were uniform; combed yarns advanced from 10 to 15 per cent. during the year, but latterly declined again.

The spinners of combed wool adopted uniform conditions of sale to go into effect February 1, 1889. The customary cash discount is to be discontinued; all goods are to be sold at thirty days net, or on time, with 5 per cent. interest after the thirtieth day. As the weavers are not satisfied with this resolution on the part of the spinners, some friction is likely to result.

A certain establishment producing novelties in dress goods states that Berlin manufacturers have monopolized German markets in staple goods and are making great efforts to crush out all competition in novelties. Inland trade is rapidly expanding because German manu-

facturers, protected by the high import duties, are now able to drive French and English goods more and more out of the markets. Export business was lively, particularly to China and Japan. Among the raw materials used cotton yarns maintained high prices on account of English spinners limiting their production and German spinners entering into a price combination. England is still the only producer of the fine numbers of cotton-threads—over 40 2-ply—and, therefore, it is difficult to compete with England in the manufacture of light half-woolen stuffs. Wages and the condition of the laboring classes have improved. The long stops of work formerly intervening between the different shipping seasons have been much abridged by the general improvement of business. Goods which by reason of strong foreign competition can not afford high wages are mostly made in the back mountain country of Saxony and Bavaria.

Meerane.—Sales of wool and half-wool dress goods, Meerane's principal products, were fairly good during the past year until near the close, when the uncertain direction in which fashion was tending brought about a comparative calm. Wool yarns having declined in price, more attention is now given to the production of all-wool fabrics. Cotton yarns were obtained principally from England, and maintained uniform quotations. Combed yarns showed a material advance towards the close of the year. Meerane dress goods find their principal purchasers in Germany, although there is a not inconsiderable export to America, England, and other countries. Exports to America and England are irregular, depending on the momentary taste prevailing there. If the fabrics sampled meet the popular taste, exporting is always lively.

Wages are the same as heretofore. There is usually a slight increase in the summer, occasioned by the great demand for agricultural laborers. It is reported that insufficient employment made hand-weaving unprofitable. Staple goods were less in demand, but high-grade goods find ready sale. Weaving wages have consequently declined on inferior grades and risen on better quality fabrics.

Ernsthal.—Fancy bed and table covers and furniture stuffs continue to be the leading items produced. Business was livelier than during the preceding year, though prices experienced no improvement. Recently there has been a considerable advance in half-fabrics, which promises to maintain itself. Wages improved, and are now satisfactory. Workmen were in demand. Large export orders were received through Hamburg and Paris commission merchants, but at depressed prices. As heretofore, the principal purchasers are in Germany, America, India, and other countries.

Frankenberg.—The factories, as well as the house industry, of Frankenberg are principally engaged in the production of two specialties, namely, chenille goods and mufflers. The production of chenille formerly yielded a fair return to laborers and manufacturers, and also to dealers, but of late years the industry has gone backwards. This has partly been brought about by the deterioration in quality resulting from increased competition, many new manufacturers believing that they must make cheap articles to secure trade. Other manufacturers necessarily followed in producing inferior grades, and thus the article has been brought into disrepute. Another circumstance which has tended to depress this trade is the fact that by present processes of manufacture the smallest quantity that can be finished at one time contains one hundred pieces, and thus when business is quiet large quantities accumulate in stock. In order to dispose of this accumulation at the opening of each new season, prices are reduced so that even the smallest margin of profit is lost to the manufacturer. America purchased in smaller quantities than heretofore. Export to England was considerable, but at depressed prices. In inland trade chenille is now handled only in job lots. Wages naturally suffered under these conditions.

In such articles as are designed to replace chenille (half-wool Jaquard portières, covers, and so-called Axminster carpets) trade was much better, although the proportionately high sample expenses considerably reduced profits. Cheap striped half-wool curtains and curtain stuffs sold readily, but yielded only small returns in consequence of the great competition.

To meet the uncertain freaks of fashion, mufflers (*cachenes*) are made from all varieties of material, such as cotton, cotton and silk, wool, wool, cotton and silk mixed, wool and silk,

all silk, etc. An excessive supply, together with the great expense of sampling such varied assortments, and the necessity of selling these sample pieces at a loss has much abridged the manufacturer's profit. Sales were fair during the first half of the past year, but then dropped off in such measure that the whole year shows a serious loss compared with 1887. As mufflers are made to suit the taste of the various countries, the export of each variety is necessarily limited. The principal reason for the diminished use of mufflers in Germany is found in the prevailing fashion of wearing clothes fitting close at the throat. Attempts have been made to introduce the manufacture of vests in lieu of mufflers, but results have not been encouraging.

Hartha. — The leading product of the hand-looms is a half-woolen fabric for aprons and coats, termed wool-dick, made from cotton warp and shoddy yarns. Business was less favorable than in 1887, on account of the sharp competition of Thuringia, where wages are lower. Besides, the prices of cotton warp and shoddy yarns advanced 8 to 10 per cent. towards the close of the year without a corresponding advance on finished products. Sales are limited to Germany.

Hand-weaving is steadily going backwards from year to year; young people usually prefer other trades. The weaving-school, which was established a few years ago under promising auspices, has recently been discontinued for lack of attendance.

Hohenstein. — The production of white and colored bed-covers, jute and fancy table-covers, and stuffs was less prosperous than during the preceding year, in consequence of the increased price of cotton and jute. Silk chenille thread is now used extensively for ornamenting woolen fancy goods, and was made in much larger quantities than heretofore. Wages in this line were fairly good. A weaver working in the factory can earn 15 marks per week, while his wife can do the preparatory work at home without interfering with her domestic duties and thus increase the earnings from 7 to 8 marks per week.

Lansigk. — The plush-weaving business was in a normal state, but markets were much depressed by an excessive supply. The price of mohair, the principal material used, has declined. Wages and places of sale remain unchanged.

Lengefeld. — Besides light goods, such as sheeting, flannel shirting, etc., heavier grades are now produced and find ready sale. Manufacturing for Roumania, which was formerly extensive, has almost ceased. Wages remain as before, but the lessened demand for mufflers, chenille, and lama, which are extensively made for Chemnitz and Frankenburg manufacturers, caused some lack of employment.

Lichtenstein. — The quantity of silk and cotton chenille shawls and fichus produced was about the same as during the preceding year, but the business is constantly growing less profitable, as raw materials are continually advancing and finished fabrics always tending downwards.

Mittweida. — Fustian of all varieties continues to be the chief product of the looms of Mittweida. Much of this is sold finished ready for use directly to dealers, and is used for dressing-gowns and lining, while considerable quantities serve as raw material to other branches of industry. Employment was regular but unprofitable. Partly on account of the combination of cotton spinners cotton yarns were much higher — at times as much as 10 per cent. — than during the preceding year. Quotations on fabrics not only showed no advance, but weavers were even compelled to give large purchasers unusual concessions. An attempt on the part of the weavers to secure higher prices by combined efforts has been of some avail. Production has increased more rapidly than consumption, and the markets are depressed by an excessive supply. Exports were inconsiderable. Wages and the condition of the laboring classes remain unchanged.

CLOTH, WOOLEN GOODS, AND FLANNEL.

Böhrigen. — On the whole, the woolen goods trade was favorable during the year 1888. Until almost the close of the year orders were plentiful, but during the last two months the demand weakened, especially in the export trade to Asia. It must be emphasized that the higher rate of protective duty has resulted very beneficially to this industry. Flannels for

shirts and coats, Jacquard articles, ladies' dress goods, covers, and, latterly, oriental shawls are the principal articles produced. A slight increase in wages has taken place.

Döbeln. — The course of business in the manufacture of cloths was satisfactory. The principal article produced is smooth, heavy cloth for export trade. Wages remain unchanged, and are sufficient.

Hainichen. — The woolen goods industry, which is highly developed in Hainichen and vicinity, enjoyed about the same trade in the past year as during the one preceding. In some branches a decided improvement is reported, caused partly by the long preceding winter, partly by the uniform prices of raw material, and the favorable conditions of labor.

Exports have diminished, especially to such countries as maintain a high protective tariff. The number of laborers employed was considerably augmented by an influx from abroad, and all succeeded in finding steady and remunerative work.

Leisnig. — Concerning the manufacture of buckskins and coatings, it may be remarked that it is very difficult to obtain sufficient orders to keep the factories profitably employed. Sales depend on the season, and are also considerably influenced by the weather. Prices of raw materials varied but slightly. Prices of staple articles for export are constantly being forced downward by excessive competition. Popular taste is tending toward cheaper grades of cloth, and it is becoming more difficult to dispose of the better grades.

Wages have advanced slightly. The critical state of business seems to be weighing heavier on employers than on the laboring classes, the condition of the latter being not unfavorable so long as they entertain modest expectations.

Oederan. — The flannel industry of Oederan has much declined, because the heavy grades here made have been displaced by shoddy goods and cotton imitations. The demand is confined to middle Germany, and the ruinous competition in this line keeps prices so depressed that manufacturers can not risk exchanging their hand-looms for mechanical looms. Some producers are already abandoning flannel making, substituting other products therefor. Raw materials rose during the past year, but finished fabrics continued to decline, and manufacturers' profits practically disappeared.

Rosswein. — During the past year the cloth weavers of Rosswein were principally engaged in furnishing cloth for the uniforms of the Saxon army. However, when bids were received for 1889, although Rosswein weavers placed their quotations 50 pfennigs per meter lower than before, they secured no contracts, competitors from elsewhere cutting prices some 80 to 90 pfennigs per meter below the rates of the preceding year. In consequence manufacturers have been forced to make other articles, and have now begun the production of cloth, woolen, and hair blankets, etc., but sales are limited and business generally depressed.

CORSETS.

In recent years the manufacture of corsets has become much less profitable than it formerly was, in consequence of the many new establishments. Overproduction forces inferior goods on the market at almost any price, so that the cheaper grades can be bought at retail as low as 60 pfennigs each. The now prevailing fashion of high-fitting corsets requires fully 10 per cent. more material and trimmings than formerly. In addition, the prices of steel braces have advanced from 10 to 15 per cent. during the last two years, and those of cotton material from 5 to 8 per cent. There has been no advance whatsoever in the prices of finished corsets. The demand for better grade goods is increasing, but there is a lack of skilled laborers able to do fine work.

FELT AND FELT-SHOE GOODS.

It is reported from Pegau that, in consequence of the long winter, retail dealers in felt goods had large sales, and therefore orders and work were abundant. The prices of wool used in the production of felt were favorable, but the prices of the finished article were much depressed.

No material change of price occurred in the felt-shoe branch. In some instances higher prices and wages were obtained, but in general the article continues to decline. Export is not

profitable. At Waldheim and Hartha the felt and leather shoe industry enjoyed a fair trade, and, notwithstanding the improved machinery and increased force of workmen, orders could not always be promptly filled.

QUILTS, MATTRESSES, ETC.

Positive overproduction in cheap quilts, together with deficient stuffing and the deterioration in quality caused thereby, have caused the trade in this article to go down, so that its production no longer pays. For this reason special attention has recently been given to finer grades. Besides the best woven stuffs, cotton and worsted tricots are used instead of cotton remnants, and original cotton and wool are used for stuffing. This is termed the "reform quilt," and is strongly recommended by physicians. Together with corresponding mattress and pillow it is sold under the name of the "reform bed," and promises ere long to compete successfully with the old-fashioned feather-beds.

There is a noteworthy deficiency of skilled female laborers, especially in the smaller towns.

Manufacturers find it profitable to deal directly with consumers, and thus evade all middlemen.

PASSEMENTERIE AND LACE INDUSTRY.

Popular taste did not favor the passementerie industry during the past year, and business in that line can not be said to have been satisfactory. Consumers, tired of pearls, demanded something else; but in attempting to supply this something else manufacturers found that with no other article could they obtain the same effect for anything like the same money; and, though the pearl business had been prosperous, the moment more expensive substitutes took the place of pearls profits became visionary.

During the first half of the year there was sufficient work at fair prices, but subsequently there was a sensible lack of employment and a consequent depression of prices and wages. Germany, and particularly Berlin, has been the leading purchaser during the past year. Export to the United States fell off very much, as many American importers now make their own embroideries, etc. During the latter half of the year many American houses gave but one-tenth of the orders of the year preceding. English trade was uncertain and hesitating; some large orders were given during the early months of the year, but of inferior goods and at ruinously depressed prices. Under these circumstances the usual regular export to Italy, Spain, the Netherlands, and the Orient could bring about no change in the state of business.

Sewed work of all kinds, trimmings, borders, and fringes continue to be the leading products of Annaberg and vicinity. They are the foundation of the prosperity of the *erzgebirge*, and are constantly being made finer and better. There was much less uniformity of style during the past year than is usually the case. Articles were made both with and without pearls, in all shades of color, and in part with great quantities of gold and silver threads. But all the various styles produced were of an ephemeral nature, and none secured extensive sales.

Cheap and middle grade staple articles designed for export are, on account of the lower wages, generally made in Bohemia. Through the agency of the Weipert branches of Annaberg houses the exports of Bohemian goods are constantly increasing, and so much trade and work is lost to Saxony. Formerly, when business was booming, there was little objection to employing Bohemian laborers and factors in the production of inferior articles; but now the situation has changed. Bohemian factors now produce all styles of middle and fine grade goods, and are overstocked with orders, while many houses on the Saxon side are closed.

It is much to be regretted that a certain class of manufacturers still continues to underbid each other in order to obtain larger orders, because these forced prices are not justified by the state of business and can not fail to bring about a deterioration in quality, much to the general detriment of the business.

In 1888, as in preceding years, great losses were experienced through the failure of English and American houses. With the narrow margin of profit now calculated on in the export trade merchants can not afford to expose themselves to such risk, and for their own protection they will soon be compelled to unite their efforts for the prevention of the incessant depression of prices and to refuse selling on too long credit.

The consumption of silk, the chief material used in the passementerie industry, was moderate during the past year, and was principally confined to Italian tram for cord making and Tussah-silk for furniture fringes and borders. The demand for lace silk has ceased almost entirely. For the wholesale silk dealer the year 1888 was in no wise favorable. Notwithstanding low prices and favorable terms offered large sales could not be made, and the comparatively large capital required in the silk trade hardly yielded the usual rate of interest, besides being exposed to the great hazards incident to this line of trade. During the first half of last year quotations on silk successively declined about 15 per cent. In July an advance of 6 per cent. took place, and then prices again tended downward until near the close of the year, when an unusual amount of speculation in silk brought prices to near the standard of the preceding January.

Pearls, the article next in importance to silk in the passementerie business, suffered much by reason of the diminished demand for pearl borders and trimmings. However, trade was fair during the first few months of the year, but, the supply greatly exceeding the demand, prices steadily went downward, and few dealers closed the year without serious losses.

During the early portion of the year there was considerable demand for cords made from silk and cotton and used in fringes, borders, etc., but in the summer this demand suddenly ceased. Factories were thus compelled to work on stock, and the prospects for 1889 are consequently not promising.

KNIT AND TRICOT GOODS.

Hosiery.— The year 1888 was one of the most disastrous that the hosiery industry has ever known. Although a quiet summer had been expected, as is always the case when a Presidential election is in progress in the United States, such complete stagnation of trade so early in the season was wholly unlooked for. The winter trade had been satisfactory, and the hope of a small summer trade seemed justified. Purchasers arrived early, but gave no information as to the direction toward which popular taste was tending in the United States. They were afraid to buy what was offered them as new, and generally departed without leaving orders. When they returned some weeks later they found the market completely deranged and the business fortunes of the year decided.

It can not be denied that too much hosiery is produced. Improved machinery furnishes greater quantities than before. The ease with which new machines can be obtained on long time by making a small payment thereon lures many manufacturers on to take more than is prudent. Added to this, in consequence of the decline of plain and white goods, it is impossible to work extensively on stock, as no one would think of making dyed goods before ordered. Thus manufacturers underbid each other week by week. No buyer was certain when he had made a purchase but that he would be able to buy cheaper within a few days. In the house industry wages were accepted which were not even known in the days of 1861–'64, and which old, substantial houses would never dare to offer, as laborers with even the most frugal habits could not possibly subsist thereby. Many exporters accepted the most ruinous prices merely to keep from closing their establishments. It could easily be proven that in many cases the actual cost of production was not realized.

Staple goods were sold at particularly low prices, but even better and fine grades did not compensate for the great expense of samples incident to the manufacture of these goods. The only article which sold well and at reasonable prices was hose dyed fast black, the quality of dyeing required being much better than heretofore.

After the Presidential election was decided business improved, more orders were placed, and since the middle of November there has been a lack of employment in exceptional cases only. Wages have also received a slight improvement.

The long-prayed-for reaction set in toward the close of the year. Cheap stocks were soon cleared away by speculative Americans, buyers arrived from all sides with plentiful orders, especially of fancy goods, prices livened up, and the whole trade assumed an upward tendency which has continued into the spring of 1889. However, it was impossible to make good dur-

ing these few winter months what had been lost during the preceding summer and fall, and orders arrived so tardy that they could be filled by extra work only. Punctual delivery was impossible in many cases.

Trade with South America opened quite lively, but recently declined. Competition is becoming more and more severe in the markets of South America, and it requires the greatest exertions to maintain the old business relations. The West Indies purchased somewhat more extensively than before. Russia's tariff and the low rate of exchange made trade with that country well-nigh impossible. Subsequently, the ruble rate having advanced, business reopened to some extent.

The uniform and substantial trade with Spain was indirectly affected by the general stagnation of the market, many new houses attempting to capture Spanish trade and crowd out the old houses by underbidding. This was all the more unfortunate because Spain purchases primarily good grades, which have come to be specialties, and the deterioration of which imperils the whole Spanish trade. France purchased extensively of half-silk and other fine grades of hose.

Raw materials, which were much depressed at the beginning of the year, experienced considerable advances toward the close of the third quarter, cotton and wool as well as silk rising from 10 to 20 per cent. These higher quotations promise to maintain themselves. Prices of finished and half-finished products could not be advanced correspondingly; principally because of extensive prior contracts manufacturers still had sufficient cheap material at their disposal.

For the manufacture of hose proper the past year was the most unfavorable known for many years. The heavy decline of prices, begun already in 1887, continued almost throughout the entire following year. With increased and improved machinery production far exceeded the demand. Merely to keep their machines going many manufacturers accepted contracts for large quantities of inferior goods at ruinous prices. This desire to keep machines running full force under all circumstances whatever can not be too strongly condemned. Nevertheless many machines were brought to a complete or periodic stand-still during the past summer, especially in smaller factories, where wages were extremely low and running expenses not calculated at all. In the old large establishments wages for good workmen remained unchanged.

The number of old wooden looms is becoming very small. Rotary iron machines of old construction are being replaced by the more advantageous cotton system. Of course, the increased number of these machines will make overproduction all the larger.

Most of all it is to be desired that the tariff laws of the United States—still the principal purchaser—be not made more unfavorable than they now are, for such change would operate most disastrously to the hosiery industry.

Textile gloves.— The condition of the Chemnitz glove industry for 1888 was far from being satisfactory, for, despite all efforts, it was not possible to remove the continued depression resting on this branch of trade. Enormous production and throwing goods on the market at all rates prevented any livening in business. Even an entirely new style, such as that of embroidered points, yields the manufacturer no profit that could equalize the losses sustained.

The industry has been very injuriously affected by the fact that for several years the small manufacturers in the vicinity, the so-called "factors," have not only worked for Chemnitz houses, but have also sold directly to foreign purchasers. English and American buyers skillfully depress prices, and often have little difficulty in duping these small makers. Naturally, after many sales had been concluded at ruinously low prices, it was impossible to advance the market, and it seems that production without profit never ends. Gloves with embroidered points will soon be thrown on the market the same as plain gloves, that is, without any margin of profit.

The rapidly developing glove industry of the United States must be viewed as the most impending danger. Especially in the production of silk mitts American industry has to a great degree crowded out foreign competition. Machines are frequently imported from England and Germany. Although the home industries are already protected by an import duty

of 50 per cent., it seems likely that the Republican party, which has again obtained control of the Government, will raise the duty on gloves still more, in order to make the United States less dependent on Europe.

For summer goods the demand was principally in the line of silk and silk-plated (cut) gloves. The demand was so great, in consequence of the low prices, that a moderate advance would have been reasonable; but, on the contrary, silk gloves have never been sold so cheap as in 1888. Of course, the lighter grades contained much inferior stuff. The result of this slaughtering of prices was the failure of many manufacturers and factors. Absence of positive loss, with no profit whatsoever, was about the most brilliant result achieved by any one. The most unfortunate feature of this is that bankrupts can always obtain credit from the silk and yarn dealers, and, being thus enabled to reopen business, they again by their frantic efforts to secure trade do their utmost to ruin the market. While some silk dealers have become more careful through the severe losses sustained during the past year, in the interest of business generally it is much to be desired that silk spinners will adopt more stringent rules in regard to giving credit.

The almost exclusive demand for silk gloves greatly reduced the sales of cotton, atlas, and tricot gloves, also cut goods. In comparison to the working capacity of the machines in use sales were insignificant and prices consequently extremely low.

Though cashmere gloves (cut) were most in demand for winter goods, large quantities were not ordered, as enormous stocks were still on hand from former years. Prices were merely nominal, and, despite the high quotations on yarn, sales were made at suicidal figures. The productive capacity in this line is great, and production is not profitable except in large quantities.

Attention must again be called to the injurious effect on trade of extra night work. The machines now in use can more than cover all demand when employed but ten hours per day. Extra work means overproduction, stagnation of markets, and general disaster.

Strange to say wages in all lines of cut gloves have been but slightly affected by bad prices.

Orders from the United States and England, which represent fully four-fifths of all sales, were given but moderately. Purchasers have become very cautious, and no longer allow themselves to be duped by cheap prices. Frequently during recent years buyers believed that the market had reached its lowest ebb, and placed their orders, and every time they have been mistaken, prices subsequently dropping still more.

The revived demand for kid gloves seriously threatens the textile glove industry. Both in value and quantity sales of textile gloves were less in 1888 than in 1887.

In most articles trade with Russia is impossible, and in others it is insignificant. Trade with France is not extensive but uniform, the French buying only such articles from Germany as they can obtain nowhere else.

Limbach.— The glove industry of Limbach is based on very substantial foundations and was but slightly affected by the many failures in neighboring towns. At public executions of bankrupts' estates finished and half-finished products were thrown on the market much below the cost of production, naturally injuring better grade goods to some extent. However, Limbach manufacturers were well supplied with orders, both domestic and foreign, and in silk gloves at least were able to recover losses sustained.

Tricot goods.— The general condition of the tricot industry may be summed up in the words "increased production, diminished profit."

The increased demand for tricot underwear, which is principally due to Prof. G. Jäger's agitation for so-called "normal underwear" has been accompanied by a continual reduction of prices. This shrinkage has become so great that it now requires a production fully 50 per cent. greater than five years ago to represent the same values. This is due to the fact that on account of supposed lucrative profits which could be made in this line competition has increased enormously, and new firms, realizing that gains can be had only with large sales, have attempted to secure trade by underbidding. Furthermore, popular taste, especially in Germany, is constantly tending towards inferior qualities.

While most manufacturers had a satisfactory amount of employment, the same statement could not be made concerning profits. Export trade was somewhat more profitable than inland trade, which was principally due to the fact that only houses of importance can permanently engage in exporting. Nevertheless smaller manufacturers exerted themselves with more or less success to deteriorate the quality and depreciate the prices of the goods.

The tricot dress goods industry is in a very unsatisfactory state. While the demand continues to be large, purchasers, being thoroughly familar with the costs of production in consequence of having more or less made for wages from yarn furnished by them, and being spoiled by advantageous purchases made from small manufacturers pressed for money, make the most unreasonable demands, which are often acceded to, though the producer can hope to obtain a profit through a phenomenally favorable raw-material market only.

Finished goods are sold at an average price of only 1 mark per kilogram above the cost of raw material. Any person familiar with the costs of production, running expenses, wages, etc., can readily see that this leaves very little for the manufacturer. During the periods between shipping seasons manufacturers often work on stock for long times, merely to keep their workmen employed. To prevent too great an accumulation of stock it is necessary to dispose of it at or below the cost of production. If we further consider the increased risk which the manufacturer assumes in granting four months' credit, instead of thirty days as formerly, we can perceive why this branch is in an unsatisfactory and unpromising condition.

The tricot dress goods business of Limbach has revived, and is in part quite lively. However, the profit realized is so meager that the least increase in the cost of raw material—such as was the case last fall—changes this profit into a loss, unless the manufacturer has prudently covered his expected demands. Even this slight profit often becomes questionable through the habit of many purchasers to bring their own yarn at the beginning of each season, and to try to induce workmen in the neighboring villages who possess a circular machine to break their engagements with their regular employers on promise of slightly increased wages. Of course, this is injurious to the workmen and destructive to the industry. This evil is less in striped and patterned goods, because they require specially constructed machines as well as thoroughly skilled laborers.

As the demand for cut tricot goods is increasing, both at home and abroad, manufacturers in this line had sufficient employment. Sales of regularly worked goods are growing less. Better grades of tricot underwear are encountering increased difficulties in the home markets. Cheaper grades yield no profit, in consequence of the enormous production and competition in Saxony and southern Germany.

Fluctuations in the prices of raw materials had the result that when raw materials became cheaper many manufacturers lowered their prices, but when raw materials advanced again manufacturers were unable to obtain increased prices on their products, and their profits were accordingly much reduced.

Exports to Belgium and Holland were moderate; those to the United States and England were much better. South America, China, and Japan are now also among the purchasers. Wages have slightly declined, but are still comparatively good. Girls earn from 10 to 12 marks per week, men from 18 to 24 marks.

DYEING, BLEACHING, AND PRINTING.

Dyeing.—The important hosiery and weaving industries of Chemnitz and vicinity, representing so many different products, keep the cotton dyers well supplied with work. In the past year the amount of work was greater than in the preceding year, and the number of laborers was correspondingly increased. Competition has kept pace with production, and many new establishments have been erected, especially in the neighboring villages. With such extended competition profits are naturally small, and some dyeing-works did not succeed in making their expenses in 1888.

Formerly the dyeing of hosiery was more profitable than that of woven goods, but this distinction has disappeared, and prices are all equally depressed. Good fast black is now the great specialty. Brilliant lisle is much less in demand than formerly.

Prices of raw materials used in dyeing, as well as of fuel, have advanced considerably of late, but no improvement has taken place either in wages or in price for dyeing.

Wool dyeing is confined to hosiery and furniture stuffs, and some dress goods. No material changes have taken place, and the general condition of the industry is the same as that of cotton dyeing.

The piece-dyeing industry of Meerane was well suppled with work, but rates were too depressed to leave any material profit.

Bleaching.—The activity of the bleaching industry is now confined to yarn for bed, table, and other covers, and some hosiery yarns. Bleaching hosiery, which was formerly both extensive and profitable, has become of little importance, in consequence of the almost exclusive demand for colored hosiery. The amount of work offered being insufficient to employ all establishments, they underbid each other, and have reduced prices to an unprofitable basis. When the bleaching of hosiery was at its height, the price of bleaching was 10 pfennigs per English pound of raw yarn, now it has been reduced to from 5 to 6 pfennigs per pound. In addition the prices of the necessary chemicals and fuel, as well as wages, have advanced. Workmen now average 2.50 marks per day.

Bleachers have attempted by a combination to enforce a rate of 8 pfennigs per pound, but as some houses refused to join in the whole undertaking failed.

The bleaching industry thus continues to be a mere auxiliary, dependent on other industries. It is unprofitable, and the low rates leave nothing for the many repairs to buildings, machinery, and utensils incident to this trade.

Printing.—Curtains and covers of jute and mohair plush and various cotton and woolen stuffs now occupy the attention of the printing industry. The demand for printed plush was about the same as in 1887. Cotton and wool stuffs were in great demand, and as the time for delivery was often very short extra work at times became necessary.

Expenses for designing new patterns are high, but can not well be avoided, as French and Swiss competitors appear in the market at the opening of each new season with complete new assortments.

Prices of raw materials underwent but slight changes, and prices of printing and wages have remained as before.

CARL A. HAUSMANN,
Consular Clerk.

UNITED STATES CONSULATE,
Chemnitz, July 20, 1889.

Delagoa Bay Railway. — Consul Smith, of Mozambique, under date of June 17, 1889, reports that the Portuguese Government has ratified the project for extending the Delagoa Bay Railway 9 kilometers further, and has concluded a contract for the continuation of that line as far as the new frontier of the Transvaal.

FALSIFICATION OF WINES IN FRANCE.

REPORT BY CONSUL DUFAIS, OF HAVRE.

The official journal of the French Government of the 15th instant promulgates a new and important law on the falsification of wines, of which I have the honor to forward herewith a translation.

F. F. DUFAIS,
Consul.

UNITED STATES CONSULATE,
Havre, August 20, 1889.

LAW OF THE 14TH OF AUGUST, 1889, REGARDING WINES.

The Senate and Chamber of Deputies having adopted, the President of the Republic promulgates the following law:

ARTICLE 1. No one can send forth, sell, or offer to sell under the denomination of wine any other product except that made by fermentation from fresh grapes.

ART. 2. A mixture of the product by fermentation of the residue (*marc*) of fresh grapes with an addition of sugar and water with wine, no matter in what proportion, can only be sold, sent forth, or offered for sale under the name of "wine of sugar" (*vin de sucre*).

ART. 3. The product of the fermentation of dried raisins with water can only be sent forth, sold, or offered for sale, under the name of "wine of dried raisins;" it is the same with the mixture of such product with wine, no matter in what proportion.

ART. 4. The casks or other receptacles containing wine of sugar or wine of dried raisins must be marked in large letters "wine of sugar," "wine of dried raisins." Books, invoices, way-bills, bills of lading, have to give the same designations according to the character of the product.

ART. 5. The bills of circulation accompanying the forwarding or shipment of such wine, wine of sugar, wine of dried raisins, must be of a special color. A ministerial decree will regulate the application of these provisions.

ART. 6. In case of infraction of the above articles the delinquents will be punished with a fine of from 25 to 500 francs, and with imprisonment of from ten days to three months. Article 463 of the penal code will be applicable. In cases of repeated delinquencies the sentence of imprisonment will always be pronounced. Tribunals may, according to the gravity of the cases, order the publishing in newspapers or by bill poster in stated places of such sentence at the expense of the delinquent.

ART. 7. Any admixture to wine, wine of sugar, wine of dried raisins, be it at the time of fermentation or afterwards, of the product either by fermentation or distillation of figs, carob bean (or St. John's bread), flower of mowra, bell flower, rice, barley, or other saccharine matter, constitutes falsification of alimentary commodities provided for by law of the 27th of March, 1851.

The provisions of this law are applicable to those who falsify, hold, sell, or offer to sell alimentary produce knowing that it is falsified. Such fraudulent alimentary produce is confiscated according to article 5 of the said law. The present law, discussed and adopted by the Senate and the Chamber of Deputies, will be enforced as the law of the State.

Done at PARIS, *August 14, 1889.*

CARNOT,
President of the Republic.

The Minister of the Interior,
CONSTANS.

The Minister of Finances,
ROUVIER.

COOKERY FOR WORKING-MEN'S WIVES.

REPORT BY CONSUL UNDERWOOD, OF GLASGOW.

I have the honor to state that I was lately invited to be present at a "demonstration" of a school for women in cooking and other branches of domestic economy. I should not, perhaps, be justified in making this report if the instruction followed ordinary lines. The novelty consists partly in cheapness, and having seen a good, palatable, and nutritious meal for six persons prepared at a cost of 1*s.* (24 cents), and having observed the ameliorating influences flowing out from the school, I have thought some account of it might be of use in certain crowded districts of the United States, where the advice and assistance of the benevolent is needed.

The school was established three years ago in Govan, a large ship-building town adjoining Glasgow, by Mrs. John Elder, widow of the well-known ship-builder, and all the expenses thus far have been paid by her. It is held in Broomloan Hall, belonging to the Established Presbyterian Church, under the charge of Rev. Dr. Macleod, who, with Mrs. Macleod, has taken an active part in promoting the work.

The teacher, Miss Martha H. Gordon, is a sensible and practical woman, and has shown great tact in gaining the good-will and sympathy of those among whom she has labored. This confidence appears to be an indispensable prerequisite; the distrustful attitude of those needing help often frustrates any attempt to benefit them. The school, though primarily aiming at humble things, seems likely to have the broader effect of raising the plane of life and morals.

The pupils are in two classes, (1) mothers and unmarried women over twenty, and (2) girls of twenty and under. Girls are not generally received until they have left school. Each class meets twice a week for lessons in cooking and once a week for darning and mending. Instruction is also given in starching and ironing.

In the leisure hours of every day Miss Gordon goes, as a friendly adviser, to houses in the district, wherever she is asked—sometimes to pupils' houses, sometimes to others—giving practical instructions upon all household matters. The mothers' class this last season numbered over two hundred, the younger class about one hundred and thirty. The attendance was naturally more regular in the latter. The numbers in both classes have been far too large for one teacher. From seventy-five to one hundred should be the maximum number, and for the next season additional teachers will be employed.

The two classes represent about two hundred families, all of which, and a great many more, have been often visited by the teacher. The pupils are the wives and daughters of workmen in ship-yards and machine-shops and of common laborers. The teacher thinks there is a visible improvement in the condition of at least thirty families, with hopeful signs in more. The gain is in personal neatness, in manners, speech, and general tone. The houses are

more tidy and the children better clothed, and there are other cheerful signs, such as flower-pots in the windows. The teacher thinks the younger pupils will be lifted permanently, and not relapse when they become mothers of families. At present the chief obstacle in the way of improvement is the want of education. The girls read fairly, but write with difficulty.

The heads of these families earn from 15*s.* to 25*s.* per week ($3.75 to $6.25). For a "house" of one room (meaning one room in an apartment house) the rent is from £6 to £7 per annum ($29.16 to $34.02); for a house of two rooms from £7 to £9 ($34.02 to $43.74). The taxes, water, and gas amount to about one-fifth as much as the rent in addition. A very little arithmetic is necessary to show how small a sum is left for clothing and food. From these statements the importance of a system of instruction by which food can be prepared at low cost will be evident.

In many respects the instruction has been general—that is, as to the ways and means by which all successful cooking is best carried on; but the materials have been chosen with rigid economy, so as to produce satisfactory results with the least money. It is easy enough to cook good dinners when there is an unlimited larder.

Mrs. Elder offered a series of prizes in money and in books, from £2 ($9.72) downwards, and on the day of the "demonstration" there was a long show of bowls filled with hotch-potch (a broth with an abundance of minced vegetables), of oat-cake, and of "scones" (thin, wheaten cakes made light with baking-powder). There were shown, also, specimens of mending clothes, of darning stockings, of ironing shirts, etc. The teacher, assisted by two pupils, stood upon a platform before the cooking range, and went through all the operations required to prepare and cook a meal. Every process and mode of manipulation was explained step by step. This occupied nearly two hours, and there were produced several excellent dishes; a fish soup, a kidney and liver soup, and a meat pie were the most successful. The fish soup was made of a large cod's head, with the addition of rice, onions, and potatoes. The kettle contained over 6 quarts, and the cost was a little more than sixpence. The meat pie is called "sea pie," because it is in general use among sailors. The peculiar excellence of Miss Gordon's method is in making the meat tender and the crust light and not greasy. The flavor was excellent. The exact cost of each dish was given.

The competition was not for the production of any one dish. Each competitor furnished in writing a plan for a series of fourteen dinners for a family of six, no dinner to exceed 1*s.* (24 cents) in cost, the price and quantity of each ingredient to be stated. One dinner was produced by each, for which the soup was broth. Each competitor also baked scones and oat-cakes.

After the examination of the specimens of cookery, mending, etc., the company adjourned to the large hall. The chair was taken by Dr. McLean, surgeon-general of the British army, who made a speech full of good sense and of practical knowledge, and with a clearness and beauty of phrase that left nothing to be desired. The hall was completely filled by the pupils and

their families and friends. The prizes were given to the successful competitors, and a large number of books were bestowed upon other meritorious pupils. The scene was really affecting, mainly on account of the condition of the people interested. The bestowal of honors at a university was a commonplace affair in comparison.

I have been furnished with a set of these simple *menus*, fourteen in number, but I do not send them, as a small book is in press, nearly ready, giving full details, a copy of which will be forwarded.*

The time will soon come, if it has not come already, when efforts of the kind here described will be needed in the more populous districts of the United States, and without depreciating the benevolent institutions which aim to diffuse intellectual and moral influences among the working people, I submit that showing them how to live comfortably upon their small wages and inducing them to cultivate habits of order, neatness, and self-respect is not less important.

F. H. UNDERWOOD,
Consul.

UNITED STATES CONSULATE,
Glasgow, September 6, 1888.

[Inclosure in Consul Underwood's report.]

COOKERY FOR WORKING-MEN'S WIVES.

(By Martha H. Gordon, as taught in Mrs. John Elder's domestic cookery classes, at Govan, near Glasgow, Scotland.)

PREFACE.

One of the principal objects of the instruction in domestic economy provided and organized in Govan some years ago by Mrs. John Elder, is to teach plain and economical cookery to women in classes, and especially at their homes.

Since this movement was begun, domestic economy has been more largely taken up by school-boards in classes from the fifth standard upwards. Obviously, however, great need still exists, and must continue to exist — many children leaving the schools before they reach the fifth standard — for instruction of the kind, and given in the mode contemplated by Mrs. Elder. The recipes in this little cookery book are among those which I have been in the habit of teaching and illustrating, in fulfillment of the duties assigned to me by Mrs. Elder. They are here printed in the hope that they may be useful, not only to those attending the classes here and in the homes of Govan, but to the wives and daughters of artisans elsewhere. Some recipes for more advanced cookery have been added, together with directions in regard to washing, sanitary hints, etc. But it will be observed that the great aim kept in view is to help working-men's wives to provide thoroughly good and nutritious food for their families at the smallest possible cost.

Some of the ingredients are, perhaps, not commonly used, but the use of them does not involve much trouble, and they will be found to make nutritious and substantial meals.

(1) Let me say, do not despise the importance of proper food to the human body. In order to nourish properly every part of the human body food should be carefully prepared and often varied. It is one of the duties of women, and a very important one, to attend to this. The mother of a family should grudge no trouble to gain skill and knowledge as to the best method of providing nourishing and palatable food for her husband and children. My experience has shown me that there are very many good, nutritious dishes to be made at ex-

* Published herewith.

ceedingly small cost. Unhappily, there are comparatively few who will take enough thought or trouble to prepare them. How many homes would be healthier, brighter, and happier if our women could only be brought to see how much depends on them, and bestir themselves in the matter.

(2) Do not despise the use of what are called scraps of meat. Scraps of meat, which can be got cheap from the butcher, will, with care and attention, make good pies and stews, and are as nutritious as more expensive cuts. A working-man's wife who studies economy and tries by careful cooking to get all the nourishment possible out of food will be able to feed her family on a tenth of what one who is careless and ignorant requires.

(3) The great art in cooking is to keep in all the nutrition, salts, etc., of our foods, and to prevent them from being wasted in vapor up the chimney or through the house. All foods, whether heat-giving, flesh-forming, or stimulant, should therefore be cooked so as to keep in their several juices and flavors. All foods over or under done are wasteful.

(4) Of the various modes of cooking I think one of the most economical, if attended to, is stewing. A clean pot with a close lid is required for stewing. After the stew is in the pot and warm do not remove the lid till it is ready, but give the pot a shake once or twice to keep it from sticking, and when done you will have a dish with all the nourishment and flavor in it.

(5) To boil meat for soup put it in cold water to dissolve all the juices. To boil meat so as to keep in the juices put it in boiling water and boil fast for ten minutes to form a crust to keep in the juices, then simmer.

(6) All bones for soup should be boiled for some hours, when the fire is not otherwise in use, so as to take all the goodness out of them, and this has not been done until they are perfectly light. The common practice of taking only two hours to boil a bone for soup is both careless and extravagant. If you wish to make a penny go as far as possible by preventing the loss from any article of food you cook of a single element of flavor or nutritiveness, which is the object of perfect and economical cookery, remember to boil long and slowly, keeping the lid of your pot on as much as possible. By this means a pot of soup costing only a few pennies will be more savory and enjoyable than one costing many shillings and carelessly made.

(7) Some sweet herbs, such as thyme, marjoram, mint, etc. (which can be grown at your windows), or a little celery seeds and two or three cloves tied in a bit of muslin are a great improvement to many soups and stews.

(8) It is much better, when you can, to grate your vegetables; both the flavor and color is better than when boiled and put through a sieve.

(9) In selecting vegetables see that they are perfectly fresh. After washing and trimming them, leave them in cold water and salt for an hour, so as to get rid of any slugs and make them crisp if drooping. To cook green vegetables, such as cabbage, greens, etc., have plenty of water with salt and a little soda in it, and when quite boiling put in the vegetables and boil quickly. Do not close lid of pot, and remove all scum as it rises. Without attention to these directions the vegetables will not be a good color. All water that green vegetables have been boiled in should be taken to the ash pit, as if put down the sink the smell would be very unpleasant in the house. With roots, such as turnips, carrots, etc., the lid may be kept on the pot. Turnips should be peeled rather thickly, then cut in four, or in slices, and boiled till tender. Carrots are only scraped, not peeled, then cut lengthways in four, and boiled till tender. If onions be boiled whole, care must be taken not to cut their tops too short, as they will fall to pieces. Never leave vegetables in the water after they are cooked enough.

(10) The following recipes are specially intended for the ordinary kitchen utensils and open fires. Some of them may appear to be repetitions, but this is not the case, as the same ingredients, when cooked in a different way, will produce a different result. Should any of the recipes seem long, it must be remembered that they, in some cases, give complete dinners, and so contain several recipes in one.

(11) The quantities specified are, as a rule, given in proportions suitable for a family from four to six in number, and the prices given are averages.

M. H. GORDON.

PLAIN HOUSEHOLD COOKERY.

Porridge.— To make really good porridge let the water come to the boiling point before the meal is put in. Pour the meal in from the left hand in a continuous stream, stirring all the time till it comes to the boil. In this consists the chief art of porridge making, and on its being well done depends the smoothness. Allow it to boil for ten minutes, then add the salt. Salt has a tendency to harden, and would prevent the meal from swelling. Boil for ten minutes after the salt has been added. Dish and take with milk.

The quantity and consistency of the porridge must be regulated by the cook.

Wheat meal porridge.— Have 1 quart of water at the boiling point; take three good handfuls, or about 2½ tea-cupfuls, of wheat meal; pour the meal regularly from the left hand, stirring all the time. There must be no lumps in it. Boil for ten minutes, add salt to taste, and boil for ten minutes more. Serve with milk, treacle, or stewed fruit.

Porridge (for indigestion).— One pound barley meal, 1 pound oatmeal, 2 pounds wheat meal, 1 pound Indian meal; mix well together, proceed in the same way as with wheat meal porridge, but boil for half an hour instead of twenty minutes.

To make a cup of good tea.— One tea-spoonful of tea to every half-pint of water; have the tea-pot well rinsed in hot water; put in the tea, take a piece of paper and close the spout, set the tea-pot near the fire, but not so near as to burn, for ten minutes; have the water boiling and add; do not let it stand longer than six minutes after adding the water. Remove the paper from the spout and you will find you have a cup of tea with all the aroma in it. Sugar and cream to taste.

Be sure not to allow the water to boil too long. It is best taken when it first comes through the boil.

Coffee.— One tea-spoonful of coffee to each breakfast cup. An earthen-ware pot is best; have it very clean and hot. Put in the coffee, close the spout to keep in all the aroma, let it stand at the fire, not too near, for ten minutes; when the water boils, pour it into the pot and cover close. Do not boil your coffee, but see that your lid is very close, so that all the fine flavor is preserved.

How to boil eggs.— Put 1 pint of water in a small pan; let it boil; put in the egg; if small, three minutes will set it; if large, four minutes. When boiling several eggs see that they are as nearly as possible the same size. Ten minutes is required to boil an egg hard.

Poached eggs.— Put 1 pint of water in a small pan, with half a tea-spoonful of salt, and a table-spoonful of vinegar; let it boil; break the egg carefully into the pan, and simmer for four minutes. Take it out carefully and serve on toast.

French toast.— Break and beat an egg well, add a pinch of salt and one gill of milk, dip some neat slices of bread in on both sides. Have your frying-pan with some hot dripping ready, then fry the bread a light brown.

This is good with stewed rhubarb laid on the top.

A nice breakfast.— One-fourth pound of old cheese, a tea-cupful of milk, two eggs, a pinch of salt, a pinch of pepper, a small bit of butter. Cut the cheese very thin, put it into a frying-pan with half of the milk, butter, pepper, and salt. Stir until the cheese is melted, then add the eggs, well beaten, with the rest of the milk. Cook for one minute and spread on hot toast.

Eggs stewed with cheese.— One egg for each person. Let them set in a frying-pan, remove them to a plate. Cut some cheese very thin; put it on the top of the eggs, with salt and pepper to taste. Set before the fire or in the oven to swell, and serve hot.

Ham and eggs.— Put your sliced ham on in a cold frying-pan, turn it two or three times, taking care not to let it burn. When sufficiently done lay the ham on a nice hot plate. Break the eggs into a cup, taking care not to break the yolks; slip one at a time into the frying-pan and baste with the ham fat. Keep the eggs as round as possible, lift with a slice, and lay on the ham.

Omelet (plain).— In making an omelet care should be taken to have the pan quite hot and perfectly dry. Put into the frying-pan 1 ounce of lard, beat very gently (the lard must not

get brown). The eggs are to be very lightly beaten, only long enough to mix them and no more. Break 4 eggs into a basin, half a tea-spoonful of salt, and a quarter of a tea-spoonful of pepper; mix, pour into a hot pan, and keep mixing quickly, till they are delicately set. Turn in the edges, let it rest a moment to set, turn it over on a dish, and serve.

Omelet.— Two eggs, 1 tea-cupful of milk, 1 table-spoonful of corn flour, 1 table-spoonful sugar, pinch of salt, tea-spoonful essence vanilla. Put the yolks of the eggs in a basin and stir them till they are light. Add the milk to them, then add, gradually, to the corn flour and other ingredients in another basin; stir till very smooth; beat the white of the eggs to a snow and add them very gently with the essence vanilla to the rest of the mixture. Have a hot frying-pan, put in a little lard and melt, pour in all the mixture, and hold it over a gentle fire for a quarter of an hour, till set and well risen; brown the sap before the fire, or bake for a quarter of an hour in the oven.

Colored eggs for Easter.— Eggs can be dyed a pretty color with the juice of a beet-root, or the peel of onions boiled in the water; or, if you have a patch of fancy print, bind it round the egg and boil it, and it will leave the impression. Wash the eggs clean before boiling. Easter eggs should be boiled for ten minutes.

Kedgeree.— One pound fish, one-fourth pound rice, 3 eggs, 1 ounce butter. Wash rice well, put on in boiling water, and boil till soft; boil the fish and take away all bones and skin and separate into flakes. Boil 3 eggs for ten minutes, then throw into cold water to prevent their turning black, then peel and cut fine. Drain all the water from the rice, put it on the fire to dry, add the butter, salt, pepper, fish, and eggs (saving one of the yolks), let it all warm, then dish and grate the yolk of the egg over it.

Pea soup and potatoes.— One pound split peas, 1½*d.*; vegetables, 1½*d.*; one-fourth stone potatoes, 1½*d.*; total, 4½*d.*

Wash the peas, and leave them to soak over night; put them on with 1 gallon of the water in which they were soaked, and the onions cut fine; boil for one hour and a half, add carrot and turnip and two potatoes, all grated; boil for another half hour, then add a tea-spoonful of powdered mint, and serve hot. To be taken with potatoes.

Barley broth.— One pound mutton or beef bones, 1*d.*; one-half pound barley, 1*d.*; one-half pound peas, 1*d.*; cabbage, turnip, carrot, parsnip, leeks, parsley, and celery, 1*d.*; total, 4*d.* In most places an assorted lot of vegetables can be got for 1*d.* or 2*d.*, according to quantity.

Nothing can be more nourishing or wholesome than broth. It is advisable to make sufficient for two days, as many think the second day's broth warmed up is the best. It can be made of beef or mutton. The neck of mutton makes very sweet broth, but some prefer a cut of boiling beef with marrow. Be sure to have a pot with a good-fitting lid. Put on the meat with 2 gallons of water, barley, and peas (if peas are used, they must be soaked the night before), and boil for one hour, then add the cabbage, turnip, carrot, and parsnip, cut small, and part of the carrot grated. Boil very slowly with lid closed for half an hour, then add leeks, parsley, and celery; boil for another half-hour; in all, boil for two hours, and serve.

Sheep's head broth.— Head and trotters, 6*d.*; barley and peas, 1*d.*; mixed vegetables, 1½*d.*; total, 8½*d.*

Get head and trotters singed; have the head split, take out the brains, wash every part well; pierce the eyes, and wash the skin well with the liquor that flows out; scrape out the eye-cavities with a knife, then put the head and trotters in a pail of clean water, with a little salt and soda; let them steep all night; take them out, and scrape them well; put them in the pot with 1 gallon of water, a tea-cupful of peas, and three-fourths of a tea-cupful of barley, boil for three-quarters of an hour; add half a turnip cut in slices, the other half with carrot, parsnip, and cabbage cut very small; boil for an hour; add leeks, celery, parsley cut small, and boil for another hour; dish the broth, and serve head and trotters with the slices of turnip for garnish. Sheep's head broth requires longer boiling than other broths.

Fish soup.— Cod head, 1*d.*; vegetables (carrot, onion, and parsley), 1½*d.*; one-half pound rice, 0½*d.*; one-half stone potatoes, 2*d.*; total, 6*d.*

Get a large cod head, wash it well; put it on with cold water (1 gallon), and boil for an hour, then put it through a sieve or clean coarse cloth; wash the rice well, and add; cut the onions very fine, and add; grate the carrot, and boil very slowly with lid closed for one hour; then add chopped parsley and all the fish taken from the head, with pepper and salt to taste. Serve hot with potatoes. A little milk will improve the soup. It is very like oyster soup.

Mock kidney soup and potatoes.—Two pounds of liver, 6*d.*; vegetables (carrot, turnip, onion), 1*d.*; one-half stone potatoes, 3*d.*; total, 10*d.*

Put on half of the liver with 1 gallon of water; boil very slowly for an hour, then take it out, and grate it; have the other half cut in nice, small pieces, and add; grate the carrot and turnip, and one potato, but do not add the potato until fifteen minutes before you take the soup off the fire; cut the onion very fine, and add it with the liver, carrot, and turnip; boil very slowly for one and one-half hours with lid close. Pepper and salt to taste, and serve hot with potatoes.

Potato soup and fried beans.—One-fourth stone potatoes, 1½*d.*; bone, 1*d.*; vegetables, 1*d.*; 1 pound haricot beans, 1½*d.*; 2 ounces dripping, 0¾*d.*; onions, 0¼*d.*; total, 6*d.*

Boil the bone for six hours in 1 gallon of water; cut the potatoes in six, and add; cut leeks fine, grate carrot and turnip, and add; boil for an hour with lid very close, then add a little parsley cut fine; pepper and salt to taste. Serve hot.

Beans: Soak the beans for sixteen hours, then boil them for two and one-half hours; drain them; have a hot pan ready, put in dripping, with onion cut fine, then add beans, and fry till of a pale golden brown.

Rice soup and baked haricot beans.—One-half pound rice, 0¾*d.*; bone, 1*d.*; vegetables, 1*d.*; 1 pound beans, 1½*d.*; onions, 0½*d.*; 2 ounces dripping, 0¾*d.*; salt and pepper to taste; total, 5½*d.*

Soup: Boil the bone for six hours. When you are going to make your soup see that you have a gallon of the water that the bone was boiled in; add the rice, carrot, and turnip, grated, leek cut up small, and a little parsley cut fine; boil for one hour; pepper and salt to taste.

Beans: Soak the beans over night; put them and the onions cut fine into a dish; salt and pepper to taste; add dripping and a pint of water; cover with a close-fitting lid, and bake in a slow oven for six hours. A most nutritious and savory dinner.

Rice soup, tripe, and potatoes.—Sheep's bag, 2½*d.*; one-half pound rice, 0¾*d.*; vegetables, 1*d.*; one-fourth stone potatoes, 1½*d.*; total, 5¾*d.*

Clean the tripe well, and boil it slowly for five hours; take it out, and cut it up into small pieces, and put it into another saucepan with a pint of stock, keep lid close; let it simmer for two hours; to remainder of stock add water to make 1 gallon, add rice, and let it boil for half an hour slowly; cut leeks and parsley fine, grate carrot, and add; boil for another half-hour, and serve hot, with salt and pepper to taste. Serve tripe with potatoes.

Haricot bean soup and potatoes.—One-fourth stone potatoes, 1½*d.*; 1 pound beans, 1½*d.*; vegetables, 1*d.*; onion, 0½*d.*; one-fourth stone potatoes, 1½*d.*; total, 6*d.*

Wash the beans, and leave them to soak for sixteen hours. Put into a clean pot with a gallon of water and the onion cut fine. Boil very carefully and slowly for two hours, then add carrot, turnip, and two potatoes, all grated, and boil for half an hour. Just before serving add a tea-spoonful of powdered sage; salt and pepper to taste. Serve hot. To be taken with potatoes.

Mulligatawny soup.—A calf's head and feet, 4*d.*; pepper, salt, carrot, and turnip, 1*d.*; apple, 1*d.*; onion, marjoram, thyme, curry powder, and sugar, 1*d.*; total, 7*d.*

Scald the head and feet in hot water, having about the size of a nut of soda in the water; then scrape the hair all off, wash clean, and boil for about two hours; then strain the stock through a sieve or cloth; take all the meat from the bones, cut into small dice, and put it back into the soup; add water until you have 1 gallon; then cut the apple, onion, and half of the the carrot and turnip into small dice, and fry them in a pan; grate the other half of the turnip and carrot, and add all to the soup, also a tea-spoonful of powdered marjoram, curry powder, thyme, and sugar, pepper, and salt to taste, and boil for one hour.

Mock cock-a-leekie (*very good*).—Two pounds veal, 6*d.*; leeks, 2*d.*; four cloves, blade of mace, one-half tea-spoonful of celery seed, 1*d.*; total 9*d.*

Boil the veal slowly for two hours in 1 gallon of water, with the cloves, mace, and celery seed tied up in a muslin bag. When the veal has boiled two hours take it out and add the leeks, well washed and cut fine. Cut up the veal in small pieces, add to soup. When the leeks have boiled half an hour add the potato, grated; boil for fifteen minutes; take out the muslin bag. Salt and pepper to taste; serve hot.

Mock turtle soup.—Calf's head, a small piece of the lights, 6*d.*; small piece of the liver, one-fourth pound fat pork, 2*d.*; 1 tea-spoonful of cinnamon, 1 of allspice, one-half of cloves, one-half of cayenne pepper, 1*d.*; one lemon, 1*d.*; one-half pound flour, 0½*d.*; 3 potatoes, 0½*d.*; 3 eggs, 3*d.*; total, 1*s.* 2*d.*

Wash and soak the head, lights, and liver for some hours. Boil them very carefully, keeping the lid close. Cut the meat up into small strips, fry the pork, cut it up into small pieces and add all to the soup. You should have 1 gallon. When it boils put in the cinnamon, all-spice, cloves, and cayenne pepper. Grate the rind of the lemon, add it with the juice to the soup. Grate the three potatoes, and add. Brown the flour before the fire, mix it smooth, and add; let all boil for ten minutes. Have 3 hard-boiled eggs, slice them up into the tureen, and pour the soup on the top of them. This recipe is equal to real turtle soup. It can be made with force meat balls, which are an improvement.

Sea pie and potatoes.—One pound scrap meat, 5*d.*; vegetables, 1*d.*; suet, 1*d.*; flour, 1*d.*; baking-powder; one-fourth stone potatoes, 1½*d.*; total, 9½*d.*

Get nice fresh meat and cut it into small pieces. Wash and cut up onions, carrot, turnip; put into stew pan with two cups of boiling water; set on the fire. Mince suet fine and mix with the flour, a pinch of salt, one-half tea-spoonful of baking-powder, mix with cold water, roll out paste the size of the pan lid, put it on top of the meat and vegetables, and let all steam for one and one-half hours at the side of the fire, not boiling but at the boil. When done cut the paste in four and take it out with the fork, then the meat and vegetables, and put the paste on top of all as it was in the pot. Serve hot with potatoes.

Potatoes and stewed tripe.—Sheep's bag, 2½*d.*; one-fourth stone potatoes, 1½*d.*; one-half pound onions, 0½*d.*; total, 4½*d.*

Get a sheep's bag and clean it well with hot water, not boiling but very hot, then leave it over night in salt and water, put it on and let it stew very gently for three hours in 2 pints of water. Cut up the onion very small, and cut the tripe up into nice pieces; return the tripe to the soup with onion and a large table-spoonful of flour, then stew for another hour. If you can afford it, 1*d.* worth of milk added to this would make it better. Serve hot with potatoes.

"*Hot pot*," *or stewed mutton and potatoes.*—One pound flank of mutton, 4½*d.*; carrot, turnip, onion, 1*d.*; one-fourth stone potatoes, 1½*d.*; total, 7*d.*

Wash and pare potatoes, cut into four or six; pare turnip, cut in slices; scrape carrot and cut in slices; cut onion fine; cut mutton into small pieces; put a little of it into the bottom of the stew-pan, then potatoes, onion, carrot, turnip, mixed with pepper and salt, then some more mutton, till all is in; add 1 pint of water, and steam for two hours. Serve hot.

German pie.—One-fourth stone potatoes, 1½*d.*; red herring, 0¾*d.*; 1 pound flour, 1½*d.*; one-fourth pound dripping, 1½*d.*; pepper, salt, baking-powder, 0¼*d.*; total, 5½*d.*

Wash, pare, and slice potatoes, soak the herring in warm water, and divide into flakes; put the sliced potatoes and herring into a pie dish, well mixed with a little pepper and 1 ounce of dripping. If the herring is not salt, add a little salt, cover, and bake for two hours.

Cover: Mix the flour and 3 ounces of dripping with a tea-spoonful of baking-powder and a salt-spoonful of salt make a stiff paste with cold water, roll out to the size of pie dish, and cover. Serve hot.

A good "poor man's" pie.—One-fourth stone potatoes, 1½*d.*; 3 ounces tapioca, 0½*d.*; one-half pound onions, 0½*d.*; 1 pound flour, 1½*d.*; one-fourth pound dripping, 1½*d.*; pepper, salt, baking-powder, 0¼*d.*; total, 5¾*d.*

Mode: Wash, pare, and slice the potatoes. Have the tapioca washed and soaked in cold water for an hour before it is wanted. Cut onion fine. Take 1 ounce of the dripping and put a little in the bottom of a pie dish, then onion, then some of the soaked tapioca, then potatoes, salt, and pepper. Repeat till all are in, then cover. Take the 1 pound of flour, 3 ounces dripping, a tea-spoonful of baking-powder, and a salt-spoonful of salt, mix well, and add cold water to make a stiff paste, roll out, and cover. Bake for two hours. Serve hot.

A good savory pie. — One pound ox liver, 3*d.*; one-fourth stone potatoes, 1½*d.*; 1 pound flour, 1½*d.*; one-fourth pound lard, 1¼*d.*; pepper, salt, onion, and baking-powder, 0¾*d.*; total, 8*d.*

Mode: Cut the liver in small pieces, also the onions. Pare the potatoes very thin, cut in slices, and put them in pie dish in layers with pepper and salt. When all in, add water till three parts full.

Cover: Take flour, lard, a tea-spoonful of baking-powder, and a salt-spoonful of salt; mix well; add cold water to make a paste; roll out and cover pie dish, and bake for two hours.

Stewed calf's head and potatoes. — Calf's head, 4*d.*; onions, 0½*d.*; potatoes, one-half stone, 3*d.*; total, 7½*d.*

Wash the head well and leave it to soak for some hours in water and a little salt. Break up the head. Put it, with 1 quart of water and the onions cut fine, into a nice clean pot. Let it boil, and then only keep it at the boil, without boiling, for three hours, and you have a good savory stew to eat with potatoes.

Lentils and rice. — One pound lentils, 1½*d.*; one-half pound rice, 0¾*d.*; onion, 0¼*d*; dripping, 0½*d.*; total, 3*d.*

Wash the lentils, soak them over night, and put them into a saucepan with 3 quarts of water. Boil for two hours very slowly; then add the rice (after washing it), with onion cut fine and dripping. Let the rice boil until it absorbs all the water. This makes a good substantial dinner.

Rice and cabbage. —One pound rice, 1½*d.*; 1 cabbage, 1*d.*; dripping, 0½*d.*; total, 3*d.*

Wash the cabbage well and boil it soft in salt and water. Wash the rice and boil it soft and dry. Mash the cabbage well; add it to the rice with the dripping, and pepper and salt to taste. Mix well, and serve hot. Good.

Potato pie. — One-fourth pound suet, 1½*d.*; onions, 0¼*d.*; one-half pound oatmeal, 0¾*d.*; one-fourth stone potatoes, 1½*d.*; 1 pound flour, 1½*d.*; one-fourth pound lard, 1¼*d.*; baking-powder; total, 6¾*d.*

Chop the suet very fine, cut the onions small, pare the potatoes very thin, and cut in slices. Take a large pie dish, scatter some suet in first, then some onions, then some meal, and a layer of potatoes, pepper and salt, till all is in. Put potatoes on the top, then cover with a crust made of the flour, lard, and 1 tea-spoonful of baking-powder. Bake for two hours in moderate oven.

Savory meat pie with potatoes. — One-half pound liver, 1½*d.*; 1 pound scrap meat, 5*d.*; onion, 0¼*d.*; 1 pound flour, 1½*d.*; one-fourth pound lard, 1¼*d.*; pepper, salt, baking-powder; one-fourth stone potatoes, 1½*d.*; total, 11*d.*

Cut the meat and liver into nice thin slices. Chop the onion fine. Put a table-spoonful of flour, a tea-spoonful of salt, a tea-spoonful of pepper on a plate; then mix, and dip your meat and liver in this. Roll a small bit of onion in a piece of liver, then the liver in a slice of meat, and lay it very lightly in a pie dish, heaping it in the center; add water till the dish is three parts full, then cover.

Cover: Flour, lard, and a tea-spoonful of baking-powder, mixed well together, with cold water and a pinch of salt; roll to make nice stiff paste. Cover and bake for two hours. Serve hot with potatoes.

Skirt pie and potatoes. — One and one-fourth pounds beef skirting, 5*d.*; pepper and salt, 0¼*d.*; baking-powder; 1 pound flour, 1½*d.*; one-fourth pound lard, 1¼*d.*; one-fourth stone potatoes, 1½*d.*; total, 9½*d.*

Beef skirt is very tender and good if nicely cooked. Cut it across in thin slices. Mix a table-spoonful of flour, a tea-spoonful of salt, one-half tea-spoonful of pepper on a plate, and dip each slice of meat in this mixture. Roll up tightly and place in a dish, keeping it well in the center. Fill three parts full of water, and cover.

Cover: Flour, lard, baking-powder, pinch of salt, mixed well together; add cold water to make stiff paste. Bake two hours. Serve hot with potatoes.

Two dinners from a sheep's pluck.—One sheep's pluck, 6*d.*; 1 pound onions, 1*d.*; 2 ounces dripping, 0¾*d.*; some sweet marjoram, pepper, and salt, 0½*d.*; one-half stone potatoes, 3*d.*; total, 11¼*d.*

Split the heart, cut the lights, and soak in water for an hour. Take them out and cut in small pieces. Put a tea-spoonful of dripping in a stew-pan with 2 onions cut fine. Let them brown. Add the heart and lights with 2 cups of water, half a tea-spoonful of powdered marjoram, let them boil, and keep them simmering for two hours. Serve with potatoes or rice.

Fried liver.—Cut the liver in thin slices. Cut the onions fine. Put a table-spoonful of dripping in a pan; let it get hot. Add the liver, and let it cook for about ten minutes, then turn it out on a warm dish. Put in the onions, and fry them brown. Mix a tea-spoonful of flour and some pepper and salt in half a cup of water, and stir it into the pan with the onions. Let it boil up for a minute, then pour it over the liver.

Two days' dinners for a family.—Ox foot, 5*d.*; vegetables (cabbage, turnip, carrot, leek, parsley), 2*d.*; pot barley, 1*d.*; potatoes, 3½*d.*; cheese, 1½*d.*; flour, 1½*d.*; total, 1*s.* 2½*d.*

First day's dinner, broth, stewed ox-foot, and potatoes; second day's dinner, broth, cheese, and potato-pie.

To make two days' broth, get a good ox-foot, cleaned, wash it well, and put on in 2 gallons of cold water. Boil very slowly for five hours the night before it is wanted, then take it out, and skim all the oil carefully off. After breakfast put on the stock that the foot was boiled in (keeping out one pint); add water to make up 2 gallons; wash the barley well and add. Wash the vegetables very carefully, cut them very fine (grating the carrot), and add them, after the barley has boiled slowly for an hour. Keep the lid close on the pot, and boil slowly for another hour, in all two hours. Salt and pepper to taste.

Ox-foot stewed to be taken with potatoes: Cut the foot in nice pieces, put in a saucepan with the pint of stock (if liked, a little of the white part of the leek also). Take 1 ounce of flour, pepper, salt, and a table-spoonful of oil, mix with a little tepid water, make into little balls, and add twenty minutes before you serve on a hot plate, the balls being put round the pieces of foot. Boil half the potatoes, and you will have a good dinner for a large family, taking one half of the broth, and leaving the other to be warmed up next day, and taken with potatoes and cheese pie.

For cheese pie take the other half of your potatoes, pare very thin (as the best part of the potato is next the skin), and cut in slices. Put in a layer of potatoes, pepper, and salt; grate the cheese, put in some, and so on till all is in, then over all put in a large table-spoonful of the oil. For crust take flour and the rest of the oil taken from the foot, and mix with tepid water, a tea-spoonful of baking-powder, a little salt; roll out, and cover pie. Bake for two hours, and serve hot.

Soup and haricot of ox-tail.—Good ox-tail, 1*s.*; vegetables, 1½*d.*; rice, 0½*d.*; total, 1*s.* 2*d.*

Haricot: Separate the tail at the joints, wipe with a clean cloth. Take the root and divide in four for the first day's dinner, put it in saucepan, and let it get nice and brown; be careful not to let it burn. Then add the half of the vegetables (which should be carrot, turnip, and onion), 1 pint of boiling water; let it simmer for four hours. Salt and pepper to taste; serve hot.

Soup: Take the rest of the tail, put on with 3 quarts of cold water, 3 cloves, 1 tea-spoonful of mixed sweet herbs, 10 peppercorns, 12 allspice; tie all these in a muslin bag. Let all simmer very gently for three hours. Add the rice, after it has been well washed, and the other half of the vegetables cut very fine or grated, and boil for two hours more with close lid. Serve hot.

Stewed hough.—One pound hough, 5*d.*, cut in slices (by the butcher, to break the bone). Take out the marrow, and put it into the stew-pan with 2 sliced onions and a tea-spoonful of flour. Let it brown, then put in the slices of meat, and let them brown for a few minutes; add half a tea-cupful of water, some pepper, and salt. Stew slowly for four hours, with lid very close. Tough pieces of meat can be made very palatable by long, slow stewing.

Take 1 pound of the common dry green peas, having soaked them for sixteen hours in water, with a bit of soda the size of a nut; and, after the hough has stewed for three hours and a half, add the peas with a table-spoonful of vinegar, and let them stew together for half an hour. Serve hot.

Stewed steak.—Get 1 pound stewing steak and a piece of suet, which is always given. Chop the suet fine and fry. Dredge the steak with flour, and fry very lightly in stewing pan on both sides. Then add a tea-cupful of water, boil, then simmer very gently for one hour and a half. Add salt to taste, and half a tea-spoonful of pepper. A table-spoonful of flour mix in water, add, boil, and serve hot.

This is very good, and goes a great way further if you add some vegetables. You can vary the flavor with carrots, onions, parsley, turnips, and sweet herbs.

Collops.—Put a little dripping into a saucepan, let it get quite hot, then put in your minced-meat, and keep turning it for ten minutes or so with a fork (if liked, when the dripping is hot, before putting in the meat, add an onion chopped fine and a tea-spoonful of flour). When all is a nice brown, add as much boiling water as will cover the meat; close the lid, and stew very gently for one hour. Pepper and salt to taste.

Stewed rabbit.—Cut the rabbit into eight pieces and fry till brown, add a tea-spoonful of curry powder, quarter tea-spoonful pepper, half a tea-spoonful powdered thyme, some carrot and turnip cut in slices, two gills of water. Simmer (with close lid) for one and a half hours. Mix 1 table-spoonful flour with water till smooth, 1 small table-spoonful burnt sugar, 1 of vinegar, a little salt to taste, add this to the stew, and boil all another minute or two. Serve hot.

Curried rabbit.—One rabbit, 2 onions, 1 apple, 1 tea-spoonful curry powder, 1 ounce dripping, and a little salt. Wash and dry rabbit, cut it up in small pieces, put the dripping in a stew-pan, let it get quite hot; peel and chop up the onions, also the apple, fry them till a pale brown; add the pieces of rabbit, and fry them on all sides; stir in a tea-spoonful of curry powder, a pinch of salt, and mix well with the meat. Add a tea-cupful of water, and stew very gently with lid close for an hour and a half. Serve with dry boiled rice for a border round it.

Rice and cheese with green peas.—One pound rice, 1½*d.*; three-fourths pound dry green peas, 1½*d.*; one-fourth pound cheese, 1½*d.*; vinegar, sugar, pepper and salt, 0½*d.*; milk, 0½*d.*; total, 5½*d.*

Wash the rice and put it on to boil in 2 quarts of water, with a tea-spoonful of salt. When soft and all the water taken up stir in the milk with more salt, if required, and pepper to taste. Grate the cheese (old cheese is best), mix it in, but keep a table-spoonful to put on the top of the dish. Warm all up in the pot; then turn out on a pie dish. Put the table-spoonful of cheese on the top, and let it brown in the oven or before the fire. Get the common dry green peas, soak them for sixteen hours with a bit of soda the size of a bean in the water. Then boil in salt and water. When soft drain, and add 2 table-spoonfuls of vinegar, 1 tea-spoonful of sugar, pepper and salt to taste; shake in the saucepan well. Serve hot.

Indian meal and cheese.—One pound Indian meal, 1*d.*; one-fourth pound cheese, 1½*d.*; dripping, 0½*d.*; total, 3*d.* Boil the meal for one hour, and let it be very thick. Grate the cheese and add with dripping, pepper, and salt. Serve hot. Good after hard day's work.

Potted head.—Half an ox head, 1*s.* 6*d.* Break up the head, wash and soak it in water for a few hours. Boil slowly for five hours in enough water to cover it. Then take it out, and skim the fat off the pot. When cold, lay the head on a clean board, and take the meat off the bones. Cut the meat into small pieces, and put it back into the pot. Add a table-spoonful of salt, a table-spoonful of Jamaica pepper, a tea-spoonful of black pepper, a pinch of cayenne pepper, and boil all for half an hour; then put into basins, and let stand till cold and stiff. This, warmed up, will make good dinners for two or three days, with potatoes.

Black pudding.—One quart of blood and skins, 1*d.*; one-half pound suet, 3*d.*; and one-half pound oatmeal, 1*d.*; one-half pint skimmed milk, 0½*d.*; 1 tea-spoonful of mint and a little salt, 0½*d.*; total, 5½*d.*

Get the blood free from clot. Mix with the oatmeal. Add suet, salt, a table-spoonful of Jamaica pepper, a tea-spoonful of black pepper, and a tea-spoonful of powdered mint. Warm the milk, add and mix thoroughly; turn the skins inside out, and wash them well in warm water and salt. Then rinse them well in cold water, and fill three parts full with the mixture. Tie the two ends together; put them in hot water and boil slowly for twenty minutes. While they are boiling prick with a pin to let the air escape. For serving, toast before the fire, or fry in a pan for ten minutes.

To boil potatoes.—Wash the potatoes clean in cold water, put them in a pot with cold water to cover them, and a table-spoonful of salt; boil from twenty minutes to half an hour. Take a fork, and feel if their center is quite tender; if so, drain off all the water, put a clean cloth over the potatoes in the pot, let them stand by the side of the fire with lid on to steam. When quite dry, take them out very carefully, peel them without breaking, and put them in a hot dish. If the potatoes are watery put them in boiling water and keep boiling rapidly till done; dry well and it will make them quite mealy.

How to boil rice.—Half-pound rice, a pinch of salt, a quart of water, and a table-spoonful of dripping.

Put on a quart of water, let it boil. Wash the rice well. Throw it into the boiling water with a pinch of salt. Boil for fifteen minutes. The rice must be soft, but each grain separate; drain it in a colander, and shake it well. Put the dripping into the pot, then put the rice back, and let it swell slowly near the fire for ten minutes. Serve hot.

How to boil macaroni, and to make macaroni cheese.—Put on a quart of water, let it boil. Add a little salt, then a half-pound of macaroni. Boil for half an hour; drain it in a colander. If for cheese, put one cup of milk into the pan, one-fourth pound grated cheese, a table-spoonful of dripping, a table-spoonful of flour, one-half tea-spoonful of pepper, a little salt. Let it boil. Grease the bottom of a pie dish, put in the macaroni. Pour the milk, cheese, flour, pepper, and salt over it, and last, sprinkle a little more grated cheese on the top. Let it brown before the fire or in the oven. Two eggs may be added in place of cheese, and a tea-spoonful of sugar.

FISH.

Fresh herring, baked.—Fresh herring, salt, pepper, vinegar, and dripping.

Clean the herring well, pack them in a baking dish, sprinkle salt and pepper over them, a little dripping, and two tea-spoonfuls of vinegar. Bake half an hour. Serve hot. Good cold.

To fry herring.—Clean and dry the herring, put some salt, pepper, and oatmeal on a plate; dip each herring well in the mixture; have a frying-pan hot with some dripping in it, put in the herring and fry, turn carefully, and fry the other side. Serve hot.

Another way to fry fresh herring.—Cut off the head, fins, and tail, split them up the back; clean well; take out the backbone, scrape them, salt and pepper the inside. Take two herrings, place the insides together flat, dip them in oatmeal, and fry for about eight minutes over a clear fire in a frying-pan.

To boil fresh herring.—Wash, gut, dry, and rub them over with a little salt and vinegar; put them into boiling water with a table-spoonful of vinegar, and simmer for ten minutes. When done take them out of the water immediately. If they are to be kept hot for some time cover them with a clean cloth.

To boil salt herring.—If very salt, leave them to soak in cold water for some hours. Put them on to boil in cold water, and let it come slowly to the boil. When boiling, draw to the side of the fire, and keep at the boil for ten minutes, and take them from the water the moment they are cooked. If salt fish are allowed to boil it hardens them.

Baked sprats.— Sprats, dripping, parsley, salt, pepper, and vinegar.

Clean and wipe the sprats gently; mix a table-spoonful of chopped parsley, a tea-spoonful of salt, and half a tea-spoonful of pepper on a plate; dip in each sprat, and put in a baking dish, with a little vinegar and a little dripping on the top, and bake for half an hour. Good hot or cold.

Fish pie.— Cod head, 1*d.*; one-fourth stone potatoes, 1½*d.*; 1 pound flour, 1½*d.*; one-fourth pound lard, 1¼*d.*; baking-powder, 0¼*d.*; total, 5½*d.*

Get a large cod head, wash it well, place it in a pie dish, and put the dish into a pot with water; but do not allow any of the water to get into the pie dish. The head is to be cooked by the steam. Let the water boil hard for half an hour, then take out the head and remove all the meat from it; boil and slice one-fourth stone of potatoes, put a layer of potatoes into the pie dish first, then fish, pepper, salt, till all are in, adding only any of the liquid that was in the pie dish, then cover with paste.

Salt cod-fish cakes.—Two pounds cod-fish, one-fourth stone potatoes, 1 egg, pepper, flour, and dripping.

Soak the fish over night. Put it on to boil. Whenever it boils draw it to the side, and let it steam (salt fish should never be allowed to boil, for it only hardens it). When done take out all the bones; have your potatoes boiled; mash them and the fish together, with pepper and salt to taste. Beat up the egg and add it. Make into thin cakes, flour them, and fry them, with dripping, a light brown. Fresh fish can be done in the same way, and is more nutritious.

Fish cooked in its own juice.— One pound fish.

Have your fish well cleaned, wipe it well, and put it into a jar with a clove or sprig of parsley; cover very close, and set it in a saucepan of boiling water, keeping it boiling for half an hour. Serve on a hot plate, with or without sauce.

Fried fish.— One pound fish, one-fourth pound dripping.

Put the dripping on the fire in a pan to get hot; have the fish cleaned and wiped, cut off fins and tail, sprinkle it lightly with bread crumbs, or flour, or meal; shake off any loose crumbs. Put a crumb of bread into the dripping to see if it is hot enough; if it hisses, it is ready; if it burns, it is overdone. Put in your fish; it will take about ten minutes to fry; have it a nice color. Serve on hot plate. (If you can afford it, you can dip it in egg before you put it in bread crumbs.)

To boil fish.— If the fish is large, with skin whole, it must be placed on the fire in cold water; if it weighs 3 or 4 pounds, it will take thirty minutes to boil. To every quart of water put a tea-spoonful of salt, and when the fish begins to boil remove the lid to one side and let it simmer gently till quite done. Have only enough water to cover the fish, or the skin will crack and spoil its appearance.

Steaks or sliced fish.— To every quart of water add a tea-spoonful of salt. When the water boils add the fish and allow it from fifteen to twenty minutes for each pound. A table-spoonful of vinegar in the water is an improvement to fish.

PUDDINGS.

Boiled scrap bread pudding.— Any odd pieces of bread. Put into a bowl, pour boiling milk over them; let them stand till well soaked, then beat up with a fork; add a small piece of dripping, a few currants or raisins, a little moist sugar; mix well up, put into a greased bowl, tie a floured cloth over the top, and boil for an hour. Good either hot or cold.

Plum pudding for the million.— One-half pound chopped suet, one-half pound flour, one-half pound bread crumbs, 1 pound grated carrots, 1 pound potatoes, 1 pound currants, 1 pound raisins, 1 pound apples, 1 tea-spoonful of ginger, 1 tea-spoonful of cinnamon, 1 tea-spoonful of allspice, 1 tea-spoonful of baking-powder, half a nutmeg (grated), 1 pound sugar, a good pinch of salt.

Mix the flour, bread crumbs, suet, carrots, potatoes, ginger, cinnamon, allspice, nutmeg, baking-powder, salt, and sugar well; then add currants, raisins (stoned and cleaned), and

apples. Mix with water or milk into a soft paste, boil in floured cloth for four hours, or in a basin or mold for five hours. Good.

Brown suet pudding.—One pound flour, one-fourth pound suet, one-half pound treacle, one-half pound raisins, salt, half nutmeg (grated), 1 tea-spoonful cinnamon, 1 tea-spoonful soda, 1 tea-spoonful cream of tartar, milk.

Warm the treacle, chop the suet very fine, mix the flour with a pinch of salt, soda, cream of tartar, nutmeg, cinnamon, all well together; add treacle, suet, raisins, and put in a well-floured cloth and boil quickly for three hours.

Fig pudding.—One pound figs, one-half pound flour, one-half pound bread crumbs, one-fourth pound suet, 2 ounces sugar, half a tea-spoonful nutmeg, 1 tea-spoonful cinnamon, 1 small tea-spoonful baking-powder, milk or water.

Chop the suet and figs fine; mix flour, bread crumbs, sugar, cinnamon, nutmeg, and baking-powder well together; add suet and figs, with enough milk or water to make into dough. Roll it into a floured cloth, leaving room for it to swell, and boil very fast for three hours.

Indian pudding.—One quart milk, one-half pound Indian meal, 1 small cup treacle, 1 table-spoonful dripping, 1 tea-spoonful ginger, 1 egg, 1 tea-spoonful baking-powder, a pinch of salt.

When the milk is nearly boiling wet the meal with some of the cold milk and let it boil; then add the treacle, dripping, ginger, pinch of salt, and egg well beaten; lastly, the baking-powder. Turn it into a pie dish and bake for two hours.

Cottage pudding.—One cup milk, 1 tea-spoonful (large) butter, 1 tea-spoonful sugar, three-fourths pound flour, 1 tea-spoonful soda, 1 tea-spoonful cream of tartar, yolks of two eggs.

Mix sugar, yolks of eggs, and butter to a cream; then add the milk and flour by degrees; beat very light, then add soda and cream of tartar, and bake for one hour.

Sauce.—Half a cup of milk, stir in two table-spoonfuls of sugar, beat the whites of two eggs to a slight froth, and stir in; flavor with vanilla before serving.

Swiss pudding.—One pound apples, 2 table-spoonfuls stale bread crumbs, 1 egg, 3 ounces sugar, 2 tea-spoonfuls butter, or dripping.

Peel, core, and slice the apples and stew in a covered jar; when done add the sugar and a tea-spoonful of butter; when cool, stir in the egg, well beaten; butter the pie dish; strew bread crumbs about an inch thick at the bottom, and as many up the sides as will remain on; pour in your apples, and strew over them the remaining crumbs, and bake for one hour.

Rhubarb or apple dumpling.—One pound flour, one-fourth pound suet, 2 pounds apples or rhubarb, 6 ounces sugar, 1 tea-spoonful baking-powder, one-fourth tea-spoonful salt; if apples, two cloves; if rhubarb, half the skin of a lemon, or a little ginger.

Chop the suet fine, and mix it with the flour, salt, and baking-powder; then add a little water till you have a nice, stiff paste. Roll out enough of the paste to line your dish, both bottom and sides. Peel and core the apples, cut them into six slices. If it is a rhubarb dumpling, cut the rhubarb in 1-inch lengths, and put it into the basin with the sugar and flavoring. Then take the remainder of your paste and roll it out the size of the top of the basin, wet the edge of the paste lining and lay on your paste cover so that it will stick to it; then flour your cloth and tie it up. Have the water boiling; boil your dumpling for three hours, and turn it out.

A good tapioca pudding.—Soak 3 table-spoonfuls of tapioca in some ginger wine for one hour; then add a little sugar, 1 beaten egg, and some milk. Grease a dish, pour it in, and bake for one hour.

Sago can be made in this way, also bread and butter pudding; using more wine, with a little water and no milk, is a nice change.

Simple trifle.—Six sponge cakes, 2 eggs, 1½ table-spoonfuls jam, 1½ breakfast-cupfuls milk, 1 tea-spoonful sugar.

Cut sponge cakes in slices and arrange neatly in a pudding dish; pour a little milk over them, just enough to make them soft, then spread the jam over. Take the eggs and separate the whites from the yolks; lay aside the whites; beat up the yolks in a bowl. Put sugar and

a breakfast-cupful of milk into a small pan and bring it to the boil; then pour this over yolks, stirring all the time with a fork; return it to the pan, and stir over the fire till it thickens a little (it must not boil, or the eggs will curdle), then put spoonfuls lightly over the sponge cakes. Whisk up the whites with a knife into a stiff froth, and lay lightly on the top. Stale sponge cakes are very good for this pudding, and are to be had cheaper on Saturday night.

Marmalade pudding.—One breakfast-cupful of flour, 1 breakfast-cupful bread crumbs, 2 ounces suet, 1 tea-spoonful baking soda, 1 table-spoonful sugar, 3 table-spoonfuls marmalade, butter, and milk.

Chop suet fine, and put in a basin, add bread crumbs, flour, sugar, soda, and marmalade; mix with a little buttermilk till the whole is wet (it should not be very moist), and beat up a little with a fork; grease a bowl, put in the pudding, and cover with a greased paper; put the bowl into a pot with an inch of boiling water in it; put the lid of the pot closely on and steam for two and a half hours.

This pudding can also be made with sirup, instead of marmalade.

Christmas pies (simple).—One-half pound apples, one-fourth pound figs, one-fourth pound currants, one-fourth pound raisins, one-fourth pound sugar, one-half ounce cinnamon, one-half ounce ginger, 1 pound flour, one-fourth pound lard, 1 tea-spoonful baking-powder.

Peel and core the apples, and cut them into small dice, put them in a basin with the sugar; mince the figs fine; stone and mince the raisins (or use sultana raisins); pick and rub the currants very carefully with a cloth; put all into a basin with the apples and sugar, add the cinnamon and ginger (and any other flavouring that is liked). Mix all well together (the mince is all the better of being prepared some time before it is wanted).

For the crust, mix the flour, lard, a tea-spoonful of baking-powder, and a pinch of salt, well together, then add enough cold water to make a stiff paste; roll out to about a quarter of an inch thick. The pies can either be made in small tins or soup plates. Rub the tins or plates well with lard, cut the pastes to the right size, put the mince-meat in carefully, wet round the edges, and cover the top with paste, and bake in a not too quick oven.

Jam roly.—One breakfast-cup of flour, 1 breakfast-cup of bread crumbs, 2 ounces suet, 1 pound jam, 1 table-spoonful of sugar, a small tea-spoonful of baking soda.

Put in a basin the flour, bread crumbs, suet chopped very fine, soda, and sugar, and mix with cold water into stiff paste, and roll out into a thin sheet about one-fourth inch thick; take a bowl and grease it with dripping, line it with some of the paste, spread at the foot of the bowl some jam; then lay in a layer of paste, repeating layers of jam and paste, till the bowl is filled; wet the edges of the last layer of paste, and turn down over it the lining of the bowl; cover the top with a greased paper, and put the bowl into a pot with half an inch of boiling water in it; put the lid of the pot close on, and steam for two hours, then turn out.

This pudding is very good made with apples instead of jam.

A few hints on pudding making.—When a pudding is to be boiled, see that the cloth to be used is very clean, and that it is dipped in boiling water, dredged with flour, and shaken well before the pudding is put into it.

If a bread pudding, it must be tied loose. If a batter one, it must be tied tight.

When a shape or basin is to be used they must be well greased before the pudding is put in. When it is ready care must be taken in lifting it out. Allow it to stand for a few minutes, before unloosing the cloth.

All puddings must be boiled in plenty of water, turned frequently, kept closely covered, and never allowed to go off the boil.

If the pudding is to be baked, the dish or pan must be also greased before it is put in. Bread and custard puddings require time and a moderate oven to raise them.

As a rule, steamed puddings are put in an earthen-ware dish, covered with a tight cover or greased paper, which is placed in a pan of boiling water, which must not come more than three parts up the sides of the pudding dish. If the water boils away, more boiling water must be added, and it must be kept always boiling. Be careful in removing the lid that no

drops fall on the pudding. Puddings, etc., when steamed, do not require so much liquid in them as when baked. The dry air of the oven dries them, steaming keeps them moist.

Plain bread pudding. — Any odd pieces of crust or crumbs of bread will make a nice pudding. To every quart allow half a tea-spoonful of salt, 1 tea-spoonful of grated nutmeg, 3 ounces of sugar, half a pound of currants, and half an ounce of butter.

Break the bread into small pieces, and pour as much boiling water over it as will soak it well. Let this stand till the water is cool; then press it out, and mash the bread with a fork until it is quite free from lumps. Measure this pulp, and to every quart stir in salt, nutmeg, sugar, and currants, in the above proportions; mix all well together, and put into a well-buttered pie dish. Smooth the surface with the back of a spoon, and place the butter in small pieces over the top; bake in a moderate oven for one and a half hours, and serve very hot. Boiling milk substituted for boiling water would very much improve the pudding.

Oatmeal pudding. — One-fourth pound suet chopped fine, one-half pound oatmeal; 2 onions chopped fine, a tea-spoonful salt, and half a tea-spoonful pepper; mix well together without water; tie it rather loosely into a floured cloth, and boil for three hours.

A cheap dish, and eaten with bread or potatoes. Good and nourishing.

Suet crust for pies or puddings. — To every pound of flour allow one-fourth pound beef suet, half a pint of water, half a tea-spoonful of salt, and a tea-spoonful of baking-powder.

Free the suet from skin, chop it extremely fine, and rub it well into the flour, with salt and baking-powder; add the water, and work the whole into a smooth paste, roll it out, and it is ready for use.

The above, with the addition of treacle or fruit, and rolled up as a rolly-poly in a flour cloth, and boiled for three hours, is very good.

Apple sauce. — One pound of apples, peeled, cored, and cut in thin slices. Stew with 1 ounce sugar, half a tea-cupful of water. Stew till in a pulp, and serve with roast pork, etc.

Mint sauce. — Chop a good handful of green mint up fine, put into a bowl with a large table-spoonful of brown sugar, half a tea-spoonful of salt, a quarter tea-spoonful of pepper, and a tea-cupful of vinegar. Serve with cold meat or lamb.

Brown sauce. — One ounce butter, 1½ ounces flour, half a tea-spoonful of salt, a quarter tea-spoonful of pepper, a table-spoonful of vinegar, and a small onion.

Put the flour before the fire till it is a pale brown, put the butter and onion, cut fine, into the pan, let it get pale brown; add the flour made smooth in a cup of water, a little pepper salt, vinegar, and another one-half cupful of water, boil and drain.

White sauce. — One ounce butter, 1½ ounces flour, half a teaspoonful of salt, a quarter tea-spoonful pepper. Mix together in a pan, add the milk gradually (about two tea-cupfuls), let it boil, and serve for fish or vegetables. For mutton sauce add to the above a handful of parsley, washed well and chopped very fine.

Pudding sauce. — Two teacupfuls of milk, half a cup of sugar, 2 eggs, a table-spoonful of vanilla. Beat eggs to a froth with sugar. Boil milk and sugar, pour over them, stirring all the time, add vanilla.

Plain pudding sauce. — One table-spoonful corn flour, large table-spoonful sugar, tea-cupful milk, and 1 egg. Beat egg, sugar, and corn flour, with table-spoonful of milk, very light, boil the rest of the milk, pour it over the mixture, stirring all the time.

Preserved rhubarb. — Wipe the stalks of young rhubarb, cut in neat pieces. To every pound of rhubarb add 1 pound of sugar and the grated rind and juice of 1 lemon. Put sugar and lemon on the fire to melt; when melted add rhubarb. Boil for half an hour, taking care not to break the rhubarb. Take it out carefully, put it in jars, let it cool, then cover with paper, and put away for winter use.

To preserve rhubarb for winter use. — Rub the rhubarb well with a damp cloth to take off any sand, dust, or smoke; when perfectly clean cut it into nice pieces about an inch long, and put them into a deep earthen-ware dish. To every 6 pounds of rhubarb add 6 pounds of sugar and one-fourth pound of best whole ginger. Cover the dish and let it stand for two days. Then run off the sirup into a preserving pan and boil it for half an hour; then add the rhubarb

and boil until it is clear; when it is transparent it is done. Stir it as little as possible, so as not to break the rhubarb (it looks best whole). This preserve will keep for a year.

Apple jelly.—Two pounds apples, 2 pounds rhubarb, 2 lemons, and sugar.

Wipe clean and quarter the apples, remove any decayed pieces, keep in the seeds. Wipe the rhubarb clean, and cut it up into small pieces; wipe and peel the lemons very thin; put all in jelly pan, and just cover with water, add the juice of the lemon, and boil to a mash. Then pour into a jelly bag, and let it drain; measure the juice, and to every pint add 1 pound of sugar. Put the jelly pan on the fire, and bring to the boil, stirring until all the sugar is melted. Let it boil for twenty-five minutes, then skim and pot.

Lemonade with citric acid. — One pound sugar, 1 pint of water, 1 ounce citric acid, 2 tea-spoonfuls essence of lemon.

Put sugar and cold water in saucepan and boil. Let it cool; then add the other ingredients, and bottle. A table-spoonful to a tumbler of water.

Sherbet (*a refreshing drink*). — One-half pound sugar, one-fourth pound tartaric acid, one-fourth pound carbonate soda, sixty drops essence of lemon.

Mix sugar and essence of lemon, and dry thoroughly. Then pass all through a sieve. Bottle and cork tight. For a tumbler of water use a tea-spoonful of the mixture.

Boston cream. — One pound brown sugar, 2*d.* worth essence lemon, 2 ounces tartaric acid, the white of 1 egg.

Put the sugar into 3 quarts of cold water, boil it, pour into a basin, and let it cool. Add the essence of lemon, tartaric acid, and the white of the egg well beaten up. Bottle. One table-spoonful of this sirup to a tumbler of cold water.

Ginger wine. — One-fourth ounce essence of cayenne, one-fourth ounce essence of ginger, one-half ounce tartaric acid, 1 lemon, 1*d.* worth burnt sugar, 3 pounds sugar, 3 quarts water.

Put 3 quarts of cold water into a preserving pan, with the rinds and juices of lemon, the tartaric acid, and the sugar. When melted take any scum off; let it boil. When cold add the essence of cayenne and of ginger, and add sufficient burnt sugar to give the color you wish. Bottle tight, and it will keep good for three months.

Raspberry wine. — One-half ounce essence of raspberry, one-fourth ounce essence of cayenne, one-half ounce tartaric acid, 1*d.* worth cochineal, 2 lemons, 4 pounds sugar, and 3 quarts water.

Put on the water with the juice and rinds of lemons, sugar, and tartaric acid; let it boil; take off all the scum. When cold, add the essences, and a few drops of cochineal to give the desired color. Bottle tight.

Apple and tapioca tart. — One pound apples, one-fourth pound tapioca, one-fourth pound sugar, 3 cloves.

Soak the tapioca all night in cold water. Peel, core, and slice the apples. Put a layer of apples in a pudding dish, then one of tapioca. Sprinkle in some sugar and cloves, and continue this process till all is in.

Cover: Three-fourths pound flour, 2 ounces lard, 1 tea-spoonful baking-powder. Mix flour, lard, and baking-powder, with a pinch of salt, well together; then add water to make a stiff paste, roll out, cover, and bake for an hour and a half.

In the spring rhubarb is very cheap and wholesome, and may be used instead of apples.

Suet can be substituted for lard or dripping, and made into a rolly-poly, and boiled for two hours.

BREAD, SCONES, AND CAKES.

To make bread. — Seven pounds flour, 2 ounces German yeast, 1 tea-spoonful sugar, 1 table-spoonful salt, a little butter, and a little more than a quart of water.

Mode: Take 2 table-spoonfuls of flour, the sugar and yeast, with a cupful of tepid water (the water to be the heat of new milk), set it near the fire to rise for half an hour. Put all the flour but one handful into a basin, mix well with the salt; if the yeast has risen well, you will have light bread. Add the yeast and a quart of tepid water to the flour in basin, knead it with

the hand until smooth; then take the butter and rub over the dough. Cover the basin with a cloth, set it near the fire, let it rise for three hours; then divide the dough into loaves, and bake for one and a half hours in a moderate oven. If the oven is too cold, the bread will not rise; if too hot, it will destroy the yeast.

Wheat meal bread. — Ingredients, 2 pounds wheat meal, 2 tea-spoonfuls of baking soda, 2 tea-spoonfuls cream of tartar, 1 tea-spoonful salt, 1 tea-spoonful sugar, 2 tea-spoonfuls dripping, and not quite a quart of buttermilk.

Mode: Mix the wheat meal, the baking soda, cream of tartar, salt, sugar, and dripping well together; then stir in the buttermilk, and mix quickly and thoroughly for not more than ten minutes. Put into a tin and bake in rather a quick oven for one and a half hours. This will make two loaves at least.

Soda bread. — Ingredients, 2 pounds flour, 2 pounds Indian meal, 3 tea-spoonfuls baking soda, 3 tea-spoonfuls cream of tartar, 1 large tea-spoonful salt, 1 large tea-spoonful sugar, a little more than a quart of buttermilk.

Mode: Mix all the dry ingredients well together, then stir in the buttermilk; mix well and divide it into three or more loaves, and bake in a tin in rather a quick oven; time, one hour. Very wholesome.

Soda scones. — One-fourth stone flour, large tea-spoonful baking soda, one tea-spoonful cream of tartar, buttermilk, and a small tea-spoonful of salt.

Mix the dry ingredients together thoroughly and lightly; add the buttermilk to make the dough, and divide into from four to six pieces. Sprinkle a little flour on the baking board, and roll out the dough with rolling-pin to about a quarter of an inch thick. Cut in four and bake on a hot griddle till of a pale brown; then turn and bake the other side the same.

Steamed brown bread. — One pound Indian meal, half a cup of treacle, salt, 1 tea-spoonful baking soda, and 1 tea-spoonful cream of tartar.

Mode: Mix meal, treacle, a pinch of salt, baking soda, and cream of tartar well together; then add enough buttermilk to make a firm dough; mix quickly, and put into steamer or basin, and steam in fast boiling water for four hours.

Baked brown bread. — One pound wheat meal, 1 pound Indian corn meal, half a cup of treacle, salt, 1 egg, 2 tea-spoonfuls of baking soda, 2 tea-spoonfuls of cream of tartar, milk or water.

Mode: Mix wheat meal, Indian meal, half tea-spoonful salt, baking soda, cream of tartar well together; warm the treacle and add it, with the milk (or water), to the dry ingredients; put in floured tin, and bake five hours in a moderate oven.

Oat cakes. — Mode: Put 1 pound of oatmeal into a basin, a very small pinch of baking soda, and a small tea-cupful of tepid water; mix well. Spread some dry meal on the baking board, lay the dough on it and knead with knuckles till you have it half the size wanted. Roll out smooth, and finish with rolling-pin; it should be very thin. Cut in three, and rub well with dry meal on both sides; put them on the griddle. The fire must not be too quick; when quite dry (not brown), take them from the griddle, and toast the other side before the fire till crisp. One tea-spoonful of melted dripping is thought by some to be an improvement.

Wheaten meal scones. — One pound wheat meal, 1 pound flour, tea-spoonful baking soda, tea-spoonful cream of tartar, tea-spoonful dripping, half tea-spoonful salt, and a little buttermilk.

Mode: Mix the meal, flour, baking soda, cream of tartar, dripping, and salt well together; then add the buttermilk to make a light dough; divide, and roll out to the thickness of a quarter of an inch, and bake on not too hot a griddle.

Rice scones. — One pound rice, one-fourth pound flour, 1 tea-spoonful sugar, and half tea-spoonful salt.

Put the rice, sugar, and salt into a saucepan, with 1 quart water, and let it come to the boil. Then set it to the side of the fire, and let it steam for two hours with the lid close till all the water has been absorbed and the rice has become soft; then sprinkle the flour on the

baking board and turn the rice out on it. Let it stand till cool; then divide into six parts, and roll out very thin. Cut each part in three, and bake on not too hot a griddle.

Potato scones.— Potatoes, flour, and salt.

Take any boiled potatoes left from the dinner; bruise them nice and smooth on the table or baking board; add salt to season; then shake some flour over them or work it in, roll out very thin, prick with a fork, and cut in three. Bake on not too hot a griddle.

Scalded scones.— One pound flour, one-half tea-spoonful salt.

Mix the flour and salt together, and add boiling water enough to make a good, firm dough, then divide it, and roll out very thin on the baking board sprinkled with flour. Cut in three, and bake on not too hot a griddle.

Indian meal and flour scones.— One pound Indian meal, 1 pound flour, 1 table-spoonful treacle, 1 tea-spoonful baking soda, 1 tea-spoonful cream of tartar, half a tea-spoonful salt, and buttermilk.

Mix all together, and then add enough buttermilk to make a nice, soft dough; divide it, and roll out each piece into about a fourth of an inch thick. Cut in four, and bake on not too hot a griddle.

Barley meal scones.— Two pounds barley meal, three-fourths tea-spoonful baking soda, three-fourths tea-spoonful cream of tartar, half a tea-spoonful salt, and buttermilk.

Mix, and add enough buttermilk to make a nice, soft dough; then sprinkle a little meal on the baking board, and roll out to a fourth of an inch thick. Cut in three, and bake on not too hot a griddle.

Crullers.— One and one-half pounds flour, one-half pound sugar, one-fourth pound butter, 2 eggs, 2 tea-spoonfuls baking-powder, milk, and lemon.

Mode: Butter and sugar, beat to a cream, add flour and milk alternately till all are in; beat up the eggs very lightly; grate the rind of the lemon into the flour, and add the juice; then put in baking-powder, mix well, roll out to a quarter of an inch thick, divide into small rounds, cutting center out of each to form rings. Fry in hot fat a light brown. The quantities given will make eighty-five crullers.

Cocoa-nut cake.—One-half pound sugar, 1 pound flour, one-fourth pound butter, milk, 1 cocoa-nut, 2 eggs, and 1 large tea-spoonful baking-powder.

Mode: Grate cocoa-nut. Beat butter and sugar to a cream, beat the eggs very light, and by degrees add the milk and flour; then cocoa-nut and baking-powder, and a pinch of salt. Bake in a tin or mould for two hours.

Small cocoa-nut cakes (*good for children*).— One cocoa-nut, 1 egg, half a gill milk, one-fourth pound sugar, one-fourth pound flour, half a tea-spoonful of baking-powder, and 1 table-spoonful of corn flour.

Mode: Mix corn flour, sugar, baking-powder, and flour well together; add milk and cocoa-nut grated, beat up the egg well, and add. Divide the mixture, and work it with your hands into small cones or drops. Bake on buttered paper in a quick oven.

Ginger bread.— One pound flour, one-half pound treacle, one-half pound sugar, one-half pound lard, 3 eggs, a large tea-spoonful of ginger, a tea-spoonful of cinnamon, half tea-spoonful cloves, 2 tea-spoonfuls of baking-powder, half a nutmeg grated, a little salt, and milk.

Mode: Melt the lard, sugar, and treacle in a sauce pan. Beat up the eggs well, mix the flour, baking-powder, spice, and pinch of salt well together; add the melted lard, sugar, treacle, and eggs. Use a little milk to make a soft batter, and bake in a moderate oven one and a half hours. Fruit can be added to this cake— raisins, currants, or almond — which will make it richer.

Rough robin.— One and one-half pounds flour, one-half pound rice flour, one-half pound lard or butter, one-half pound sugar, 1 pound currants, 1 pound sultana raisins, 2 tea-spoonfuls baking-powder, 1 tea-spoonful ground caraways, 1 tea-spoonful cinnamon, and a little salt.

Mode: Mix lard, flour, sugar, baking-powder, spices, and a pinch of salt well together, and beat well. Then add fruit. Mix with buttermilk to make a stiff batter. Bake for two hours.

Rice-cake.— One pound flour, one-half pound rice, one-half pound sugar, one-half pound butter, 4 eggs, 2 tea-spoonfuls of baking-powder, 1 tea-spoonful essence of vanilla, salt and milk.

Mode: Beat butter to a cream, add the yolks of the eggs and the sugar; beat very lightly. Then add the flour (after being well dried before the fire or in the oven), baking-powder, pinch of salt, vanilla, and sufficient milk to make a nice, thick batter. Beat up the whites of the eggs to a stiff froth, and add them last. Mix all very lightly, and bake for two hours in a moderate oven.

Seed cake.— One pound flour, one-half pound sugar, one-half pound butter, 3 eggs, 2 spoonfuls caraways, milk, and a tea-spoonful baking-powder.

Mode: Mix butter to a cream, add yolks of eggs, sugar and flour (well dried), baking-powder, seeds, pinch of salt, and milk to make a stiff batter. Beat whites of eggs to a stiff froth, and add them last. Stir very lightly, and bake one and a half hours.

Sultana cake.—One pound flour, one-half pound sugar, one-half pound lard, 3 eggs, 1 pound sultana raisins, the rind of a lemon grated, 1 large tea-spoonful baking-powder, salt and milk.

Mode: Mix the lard, flour, yolks of eggs, baking-powder, pinch of salt, sugar, and raisins well together; and add enough milk to make a stiff batter. Beat the whites of eggs to a stiff froth and add, mixing very lightly, and bake for one and a half hours.

French cake,—One pound flour, three-fourths pound sugar, one-fourth pound butter, 2 eggs, milk, large tea-spoonful baking-powder, and salt.

Mode: Beat butter and eggs to a cream; add the sugar and flour by degrees, and mix with a little milk to a stiff batter, or soft dough. Add the salt and baking-powder last; mix all well, and bake in a moderate oven one and a half hours.

Pancakes.— One pound flour, fourth-pound sugar, one egg, a tea-spoonful carbonate of soda, a tea-spoonful cream of tartar, butter-milk.

Mode: Beat sugar and egg very lightly, mix in by degrees the flour and milk, work well, add soda and cream of tartar last. Take a little dripping in a piece of clean muslin, rub over the griddle; drop batter in spoonfuls. When one side is done turn them.

Pancakes.— Rub 1 pound of flour, 2 ounces dripping, tea-spoonful carbonate of soda, tea-spoonful cream of tartar, one-fourth pound sugar, all well together. Add buttermilk to make a soft batter. Rub the griddle over with dripping, and put a spoonful on for each pancake. When one side is done turn. Can be flavored with anything that is liked, or currants may be added.

SICK-ROOM COOKERY.

Mustard poultices.— Dry mustard, cold water.

Mix enough cold water with the mustard to make it into a thick paste; when quite smooth spread it upon a piece of thin old linen, or cotton; sew it round so as to form a bag. Be careful not to make the poultice larger than required; hold it to the fire for a few minutes, so as not to chill your patient; time, from fifteen to thirty minutes; have ready a piece of clean soft cotton, or a piece of clean wadding, and when you take off the mustard poultice, put on the wadding or the cotton.

Bread-and-milk poultice.— Stale bread, cold milk.

Boil bread with enough milk to make a thick pulp; spread it on a piece of soft cotton, and apply it very hot. This poultice is often applied without a cloth between it and the affected part, but poultices put into a bag are cleaner and easier rewarmed. Bread poultices are cleansing and soothing.

Linseed meal poultices.— Linseed meal, boiling water.

Put sufficient meal to make the poultice the size required into a hot bowl, and pour on boiling water enough to make a soft paste; beat quickly for three minutes, or till it looks oily. Have ready a flannel, or cotton bag, the size required; pour in the paste, sew up the mouth of the bag quickly. Apply the poultice to the affected part as hot as can be borne.

If ordered with mustard, mix a table-spoonful of dry mustard with the meal. Good for inflammation.

Fomentation of camomile flowers. — Two ounces camomile flowers.

Put into a jar with 2 tea-cupfuls of water, cover jar very close, let it come to the boil, and infuse for fifteen minutes, keeping lid close on jar all the time; strain off the hot liquor, keep it hot, dip pieces of flannel into it, and apply externally to the part affected. Good to allay swelling and inflammation.

Bran poultice. — Make it like porridge, and put it into a bag. Be sure not to make it so soft as that any water will trickle down to annoy the patient.

Linseed or flaxseed jelly for a cough. — One pound linseed, 1 large lemon, one-fourth pound raisins, one-half pound sugar.

Boil the linseed in 2 quarts of water, then let it simmer for three hours; strain; return to the pot with raisins and pulp of lemon, and simmer, without boiling, one hour; strain again, add the sugar. Take a tea-spoonful (two or three times a day). This is very good.

Gruel. — Two table-spoonfuls of oatmeal, 2 cups of cold water, half tea-spoonful sugar, pinch of salt.

Put the oatmeal into a bowl with the cold water, let it stand for fifteen minutes; then with a spoon press all the flour from the oatmeal, and pour into the pan, leaving the meal as dry as possible; put the pan on the fire, and stir it till it boils; then simmer for ten minutes, add the sugar, and serve hot.

Some prefer gruel without sugar, and some with milk instead of water, or a little butter and a scrape of nutmeg.

Barley-water.—Two table-spoonfuls of barley, 2 quarts of water, 1 table-spoonful of sugar.

Wash the barley well; put the barley and water into a saucepan and bring it to the boil; then boil very slowly for two hours, strain it, add sugar, and let it cool. Barley-water is very cooling and nourishing. The barley may afterwards be used for a pudding, or put into soup.

Beef tea. — One-half pound gravy beef, 2 gills water.

Cut the beef very small; put it into a jar, sprinkle a very little salt over it to draw out the juice of the meat quickly, add the water, cover the jar with paper twisted close over it; let it stand for half an hour; place the jar in a pan of boiling water; keep it boiling for half an hour, and you will have good, nutritious beef tea, easily digested by an invalid.

Veal tea. — One pound veal, 1 large cup of water.

Cut the veal up very small, sprinkle a very little salt over it; put it into a jar, add the water, cover closely with paper; let it stand for half an hour; place the jar in a saucepan of boiling water, and let it boil for two hours.

Suet or milk porridge for invalids. — One table-spoonful suet, 2 table-spoonfuls flour, 1 tea-cup of milk, a little salt.

Mince the suet very fine; mix milk and flour till smooth, then put into a pan; add suet and a pinch of salt; boil very gently for ten minutes, and serve hot. This is very good and nourishing, especially for those who can not take cod-liver oil.

Fish for an invalid. — One small fish, a small sprig of parsley, 1 table-spoonful of milk.

Get a nice, fresh white fish; clean it well; put it into a small jelly jar with the milk and parsley well washed, cover very closely with paper, and set it in a saucepan of boiling water at the side of the fire for half an hour. This is a very light way of cooking fish for an invalid. It can be skinned and boned if preferred.

Egg with tea, coffee, cocoa, or milk. — Break the egg into a tea-cup, beat with a fork till well mixed; pour in the tea, coffee, cocoa, or milk, gradually stirring all the time. This is very nourishing, and good in cases of exhaustion from overwork or strain.

Lemonade.—One lemon, a large cup of boiling water.

Roll the lemon on the table to soften it; pare the rind very thin (for the white part is very bitter), squeeze the juice into a jug, taking care not to let any pips in, as they are too bitter, add the lemon rind and the boiling water, cover the jug; let it stand till cold, strain and use. Very cooling.

For a pleasant drink add a teaspoonful of sugar; but not in cases of sickness.

Breadberry, or toast water. — One slice bread, a large cup of boiling water.

Toast the bread on both sides till quite dry and a nice brown, but not burnt; break it, and put it in a jug, pour the boiling water over it, and cover; let it stand till cold, and strain. Cooling.

Koumiss, or milk wine. — One quart buttermilk, 2 quarts sweet milk, 4 tea-spoonfuls sugar.

Mix the buttermilk and sweet milk together, add the sugar, and stir till melted. Let it stand near the kitchen fire for twelve hours covered with a cloth, then bottle. As it is an effervescing drink, the cork must be tied down and the bottles kept on their sides. When the koumiss is opened it should be used.

Useful homely receipt for a cold and cough. — One ounce Spanish juice, 2 ounces honey, one-half pound treacle, 1*d.* worth laudanum, 1*d.* worth oil of peppermint, 1 pint water.

Boil down 1 pint of water with the Spanish juice, honey, and treacle in it to a gill; let it get cold, and add laudanum and oil of peppermint. Bottle tight, and shake the bottle before using. Dose for an adult, a table-spoonful night and morning.

Croup. — A very good and simple remedy for croup is, a tea-spoonful of powdered alum and 2 tea-spoonfuls of sugar; mix with a little water, and give it as quickly as possible, a little at a time, and instant relief will be given.

ROASTING.

To ascertain the length of time required for roasting, weigh the meat and allow a quarter of an hour to every pound and one-quarter of an hour over. If, however, the piece of meat is very thick, allow half an hour over. Young and white meat (veal, lamb, pork) requires twenty minutes to each pound and twenty minutes over. They are unwholesome when underdone.

Before beginning to roast sweep up the hearth and make up a large fire in a well-polished fire-place an hour before it is wanted, so as to have it bright and glowing. Do not let the fire go down while the meat is roasting; add small pieces of coal or large cinders occasionally so as to keep it up. Hang the meat, by the small end, to the hook of the jack. When there is no jack the meat may be hooked to a skein of twisted worsted, suspended from a hook projected from the mantel shelf. Wind up the jack, or twist the worsted, so as to make it spin slowly. Place the dripping-pan under the joint. If you have a meat screen, see that it is bright (so as to throw back the heat upon the joint), and place it before the fire. Meat should be placed for the first ten minutes as near the fire as possible, without scorching; the great heat hardens the outside, and keeps in the juices. Baste it as soon as the fat melts. Basting prevents the meat from becoming dry and scorched. Then withdraw the meat 18 or 20 inches from the fire, and baste it very frequently while roasting with the dripping produced by the melting of the fat. If the meat is lean it must be basted with dripping melted for the purpose. The meat may be dredged with flour a quarter of an hour before it is quite ready, to make it browner and to thicken the gravy a little. When it is ready and placed on the ashet, sprinkle it with a little salt. Before making sauce of the brown gravy pour away the dripping from the dripping-pan (keep this dripping for other puposes); add a little boiling water to the brown gravy left in the pan; mix well; add a little salt, and pour it round the roast, not over, or it will sodden the meat.

To roast meat in the oven. — Place the meat in a baking tin, in a very hot part of the oven, for five minutes, to harden the outside and keep in the juice. Baste it as soon as the fat melts; then remove it to a cooler part. Place beside it a cup, or basin, of water to keep the air of the oven moist without cooling it. Baste the meat frequently. For the length of time required, see preceding directions.

All ovens in which meat is cooked should be properly ventilated, in order to allow the escape of an injurious vapor produced by meat when cooked in a close oven. Meat roasted in the oven is not considered so digestible as when roasted before the fire.

Roasting in the pot or saucepan. — This way of roasting is especially suitable for small pieces of meat, and is far more economical, because of the small quantity of fuel required.

Melt and heat a table-spoonful of dripping in a pot. Brown all sides of the meat in this, so as to harden the outside and keep in the juices. Then draw the pot to the side of the fire and let the meat cook slowly with the lid on, basting it frequently. Time required, same as in previous directions.

FRYING.

To fry a steak.— Having got your steak, which must not be thinner than half an inch, and not thicker than an inch, take the suet, which is always given with the steak, chop it fine; see that your pan is perfectly clean and dry. Place the pan on the fire with the suet; let it remain until the suet is melted and rather hot. Take hold of the steak at one end with a fork, dip it in the pan, and keep it for two minutes; then turn the other side for two or three minutes, according to the heat of the fire; then turn it. It will take about twelve minutes to cook, and requires to be turned on each side three times during the cooking. Take care that the pan is not too hot, or it will burn the gravy, and perhaps the meat, and lose all the nutriment; you must not leave the pan, but carefully watch it all the time. If not turned very often it will be noticed that the gravy will come out on the upper surface of the meat, which in turning over will go into the pan and be lost, instead of remaining in the meat. Always, in lifting, insert the fork in the fat. Serve on hot plates with salt, pepper, and the gravy round it.

To fry a mutton-chop.—Get some nice loin chops, cut the same thickness all through. Have your frying-pan very clean; put in a little dripping or lard; let it get rather hot. As soon as it begins to smoke take the chop with a fork by the small end and dip it in the fat for a minute; then turn it and let it fry for three minutes; you can turn it several times, it will take ten minutes to cook a chop an inch thick with a good, clear fire. Add salt and pepper; have a nice hot plate, and lift carefully, always putting the fork in fat. Pour the gravy round it.

To broil a rump steak.— Get your steak three-quarters of an inch thick (if it should be cut rather thicker in one part than another, beat it well with a chopper). Before cooking a steak stir up the fire (say half an hour before you intend to use it); clear away the ashes, stir all the dead cinders from the bottom, and in a few minutes you will have a clear fire fit for the use of the gridiron. Place your gridiron, with the steak, about 5 inches above the fire, and keep constantly turning the steak, to keep the gravy in. Put the fork, not into the lean part, but into fat to turn it. One pound of steak three-quarters of an inch thick will take about twelve or fifteen minutes to cook with a nice clear fire. Serve hot on a hot plate.

WASTE IN COOKING.

The following table shows how much is wasted in some of the different ways of cooking:

Four pounds of beef, in boiling or stewing, wastes about 1 pound of its substance; but you have it all in the broth or gravy, if you have kept the pot closely covered.

In baking 1¼ pounds is almost entirely lost, unless you have plenty of vegetables in the dripping-pan to absorb and preserve it.

In roasting before the fire you lose nearly 1½ pounds. Do not think you save the waste in the shape of dripping. It is poor economy to buy fat at the price of meat merely for the pleasure of frying it out.

GENERAL HINTS.

It is very desirable that all cooked food should be taken hot. When cold food is taken it reduces the temperature of the stomach; and both the nerves and vessels of the stomach are taxed, in order to bring the temperature of the food thus taken up to that of the human body. So in taking hot soup, tea, coffee, or cocoa we prevent this tax upon the internal organs. When people have been overexerted or had a long fast it is better for them to have a little hot soup or a cup of cocoa, and wait for half an hour before they take their dinner; by that time they are rested, the hot soup or cocoa has refreshed and invigorated the stomach as no wine or spirit could have done.

Before beginning to cook be careful to see that you have a clear fire in a clean grate, and that your pots and pans are thoroughly clean. To clean pots, first clean the inside out well

with pot-range, then wash them both inside and out with hot water and some washing soda; then take a cloth, with a little soap rubbed on it, dip it in fine ashes, with this rub the inside of the pot till it is quite clean, then wash it with warm water and dry. Do the lid in the same way.

Fish, if at all plentiful, is always cheaper on Thursdays, Fridays, and Saturdays, and can be had at the time the shops close at less than half price, if they have any over. For those who study economy this is worth remembering, as they can thus provide a good, cheap dinner for the next day.

Pieces of dry cheese, which the grocers are glad to get rid of very cheap, do excellently for cooking and grating.

Soap parings in the same way can be got very much cheaper, and are quite as good for boiling down for washing purposes.

HINTS ON WASHING, ETC.

Washing is always best done early in the week, say Tuesday, then you have the week before you to dry, etc. Mend what requires to be mended the day before. Soak your things before washing; if this is done it saves a great deal of trouble and hard rubbing. Boil the soap, and mix a handful of boiled soap to every gallon of hot water, with a little soda or borax (borax is better for the fine things). Into this put the shirts and linen, collars, etc., to soak all night. Bed and table linen can either be soaked in cold water or laid aside till its turn comes. Curtains or window-blinds should always be soaked in cold water to draw out the smoke.

Flannels should be well shaken, to free them from dust, and put together by themselves.

Begin your washing as early as possible in the morning. First light your boiler fire and have plenty of hot water. If it is fine, wash your flannels first. Add a little hot water to the soaked things, taking the best things first. Wash them out carefully, removing all stains. Then put them into another tub with warm water and melted soap, and wash them again; and, as they are finished, drop them into a tub of cold water, and let them lie in it for a while.

Fill up the boiler with cold water, put into it a handful of melted soap, 1 tea-spoonful of borax to the gallon of water. Wring the clothes out of the cold water, put them in the boiler, put on the lid, and let them boil gently for a quarter of an hour. Then take them out, add more water, soap, and borax, and put in the next quantity. Pour some cold water on the boiled clothes, wash them and rinse them out, then blue them. Put a little water in the tub and tinge it well with blue. Do not allow things to lie in blue water, but just dip each article in separately, and wring them out. When all are finished hang them out to dry.

If possible, bleach your clothes on grass after boiling; but where this can not be done it is yet possible, with care, to keep your linen white and clear.

Laces and muslin should not be rubbed, but squeezed with the hands in melted soap and warm water. Be careful, in boiling them, to tie them up in a handkerchief to prevent their being torn.

In washing flannels (notice particularly), to keep them a good color and to prevent their shrinking, get from the grocer 1 or 2 pounds (according to the size of your washing) of soap parings, which you will get cheap; for 1 pound of soap parings put 3 quarts of water; boil to a jelly, and with this wash your flannels. Be sure you have plenty of water warm, not too hot. Put in a handful of your soap jelly, and mix thoroughly in the water; then take the flannels, one at a time, shake all dust out of them first, then sluice the articles up and down well; rub as little as possible, for rubbing knots the little loops of wool together and thickens the flannel; wring them in a machine, if you have one, if not, squeeze them well. Dry in the open air, if weather permits, as quickly as possible.

In washing scarlet or blue flannel, put one table-spoonful spirits ammonia in the rinsing water.

For other woolen articles, such as children's dresses, shawls, etc., where there are green or other fancy colors, add to your soap jelly one-half gill of spirits of turpentine, and a table-

spoonful of spirits of hartshorn; then thoroughly wash as quickly as possible; rinse in cold water with a little salt in it, and dry quickly. If this is done carefully, the colors will remain quite fresh.

For prints. — Never rub them with soap. Boil the soap as for flannel, add to water, and wash as quickly as possible; then in the rinsing water put a few drops of vitriol, just sufficient to make it taste a little tart; this will fasten all colors except black, but black fades. For black prints better use salt or a little spirits of turpentine in the rinsing water.

To make hot-water starch. — Take a clean basin, and mix to 1 large table-spoonful of starch, 1 tea-spoonful spirits of turpentine, a tea-spoonful spirits of ammonia, with only enough cold water to make into a smooth paste; then pour boiling water (it must be boiling) over it, stirring all the time till it is quite transparent.

To make cold-water starch. — To a large table-spoonful of starch put half a tea-spoonful borax, half a tea-spoonful spirits of turpentine, mix with a little cold water to a paste; then add cold water to make the starch to the thickness of cream; stir well, and put in the things; if the things to be starched are dry, you will have to make the starch thinner.

To starch and iron a shirt — The linen should be rather damp; dip the front, collar, and cuffs of shirt into the starch, squeeze them well out, and roll up tight for some hours; then shake out and pull them quite straight, leaving no creases; rub them over with a piece of soft cloth. Fold the shirt straight down the back. Iron all the unstarched part first, then the cuffs, then the band. To gloss the front place a smooth board, covered with flannel, inside the breast, rub over the front of the shirt with a damp cloth and iron (with the heel of the iron) very nicely till quite dry and glossy.

In ironing be careful always to rub the iron over something of little value first; this will prevent the scorching and smearing of many articles.

To wash clothes with paraffine oil. — To every 8 gallons of cold water put one-fourth pound soap, shred fine, 1½ table-spoonfuls of paraffine oil, into a boiler; put in the clothes, let them come to the boil, keep the lid close on boiler, and steam for half an hour; take out the clothes, rub any parts not quite clean, and rinse in plenty of cold water.

To wash clothes in paraffine soap. — Cut down one-half pound paraffine soap, and put it into a boiler of water to melt. Rub the clothes well out of the soda water, in which they have previously been soaked, put them into a boiler and let them boil for half an hour, then put them into a tub with plenty of cold water; wash them thoroughly, then rinse in blue water, and dry.

SANITARY HINTS.

(1) Remember that pure air is food, and that polluted air is poison.

(2) Never allow the air to stagnate in your rooms or houses.

(3) Provide for the constant ventilation of your rooms. One of the best ways of doing this is keeping the window a little down from the top.

(4) Keep the vent always open.

(5) Thoroughly air all sleeping apartments, beds, and bed-clothes during the day.

(6) Do not use, for drinking or cooking, water which has long lain stagnant in cisterns or vessels.

(7) See that the water cistern is cleaned out regularly, say every month or two.

(8) See that there is no connection between the water cistern and the drain, and that the waste goes to the outside of the house.

(9) Do everything in your power to keep closets and sinks cleanly and sweet.

(10) See that the private drains from closets are ventilated by pipe opening at the roof.

(11) See that the private drains from closet and sinks are properly trapped, in order that the poisonous gases from the sewers may not get into the house.

(12) The neglect of this precaution is a fruitful cause for many of the worst diseases, such as diphtheria, typhoid fever, etc.

(13) When you need to use disinfectants, as after fever, etc., remember that they do not radically cure the evil. The only remedy is the removal of the causes of impure air or water which has produced the evil.

(14) Avoid the use of covered (or "press") beds, the most wholesome being a plain iron bed without any curtains.

(15) In cases of sickness all utensils, etc., should be kept scrupulously clean, and the precautions suggested above as to maintaining a supply of pure air should be observed with redoubled vigilance.

HINTS ON WHAT TO DO BEFORE THE DOCTOR COMES.

Croup. — Croup, or inflammatory sore throat, is caused by exposure to cold, damp air, or sudden change of weather. The signs are hoarseness and noisy breathing. Give the child a teaspoonful of ipecacuanha wine. If vomiting does not soon follow, give half the quantity. Keep the child in bed. Put a brick into the fire until it is quite hot; place a bucket of water at the bedside; put the hot brick into it, which will raise a large quantity of warm vapor, which the child will breathe. Apply a warm poultice to the throat and use warm fomentations. Milk is the best diet. If the above does not relieve, send for medical advice without delay.

A very good and simple remedy for croup is a tea-spoonful of powdered alum and 2 tea-spoonfuls of sugar; mix with a little water and give it, as quickly as possible, a little at a time, and instant relief will be given.

Diphtheria. — What goes by the popular name of croup is, in a great many instances, really diphtheria, which is a contagious general disease of great danger. The chief characteristic is the formation of a thick, tough, false membrane on the palate, tonsils, and back of the throat, spreading downwards into the windpipe. The signs are great loss of strength (never absent), the formation of the above-named membrane, sometimes high fever, as often no rise in the temperature. Sometimes eruptions in the skin appear. Whenever the above signs can be traced get medical advice without a moment's delay.

Common cold. — In the case of a child, confine the child to one room, or, if at all feverish, to bed. Apply a warm poultice to chest, and give 10 drops of ipecacuanha wine every hour or two till patient perspires and feels a little sick. In the case of a grown-up person, confine to house and keep patient warm. Mix 30 drops antimonial wine, 80 grains of citrate of potash, 3 tea-spoonfuls of sirup, or a little sugar, in 4 ounces of water (an ounce is 2 table-spoonfuls). Give an ounce of this every three or four hours. If the cough lingers, a tea-spoonful of paregoric, with 20 drops of ipecacuanha wine in a little water, should be given at bed-time.

Useful homely recipe for a cold and cough. — One ounce Spanish juice, 2 ounces honey, one-half pound treacle, 1*d.* worth laudanum, 1*d.* worth oil of peppermint, 1 pint of water.

Boil down 1 pint of water, with the Spanish juice, honey, and treacle in it, to a gill; let it get cold, and add laudanum and oil of perpermint. Bottle tight, and shake the bottle before using. Dose for an adult, a table-spoonful night and morning.

Fainting. — At once make patient lie down, with the head quite low. Loosen articles of dress. Let patient have plenty of air, and keep people from crowding round. Apply smelling salts, cautiously, to nose. Sprinkle face with a little cold water smartly. If faint continues long, or feet and hands are cold, apply hot bottles, and when patient can swallow give a tea-spoonful of sal volatile in water, or a little spirits in water.

Fits. — This means either apoplexy or epilepsy. Apoplexy is attended with insensibility. The patient falls, generally, but not always, grows purple in the face, and breathes in a snoring manner. There is paralysis of one side, and the mouth is drawn to one side. Place patient in bed, with head raised. If hot, apply cold water to head, and send for doctor.

In epilepsy patient usually gives a scream, becomes deadly pale, falls on his face, becomes convulsed, and then profoundly insensible. While in this state all that need be done is to loosen articles of dress and keep patient quiet and beyond danger of hurting himself until sensibility returns. It is then a case for medical treatment.

Choking. — Choking arises from food, or fluids, or other substances sticking in the throat or passing into the air passages. In bad choking, where the patient suddenly turns dark in the face, etc., no time is to be lost. Open the mouth and push your forefinger in a determined way over the tongue, right back, and try to hook away or push aside the hindrance. If this does not succeed, you may, by pressing the hinder portion of the tongue, bring on vomiting, and so secure relief. A good plan is sometimes tried with children, viz, that of pressing the chest and stomach against something hard, as a table or a chair, then slapping or thumping the back between the shoulder-blades. In this way air is driven from the lungs through the windpipe so forcibly as often to expel the obstacle. When the obstruction consists of a coin, as often in the case of children, a good plan is at once to take the child up by the heels and at the same time give it a shake, or slap its back. Fish bones can sometimes be got rid of by swallowing a mouthful of bread. If these remedies fail, medical help should at once be called in.

Suffocation by gases. — Drag the patient as quickly as possible into fresh air; loose clothing; dash cold water on head, face, and upper part of chest. If the breathing has stopped, artificial respiration must be resorted to.

Poisoning. — Send at once for the nearest doctor, telling him all the particulars, so that he may bring what is necessary. Unless the poison is an irritant, such as oil of vitriol or the like, which burns or destroys the stomach, etc., do all you can to make the patient sick. You may give a table-spoonful of mustard in a tumbler of warm water, or the same amount of common salt with warm water. If the patient is drowsy, as from poisoning by narcotics, you must do all you can to keep him awake by dashing cold water on his head and face, walking him about, etc. Do not permit him to sleep. In cases of poisoning by irritants emetics should not be given, but you should try to save the stomach as much as possible by giving soothing drinks, as milk, etc. Always try to find out what the poison taken has been. You will generally be able to recognize a case of irritant poison, even if the patient can not tell you, by the stains on the clothes, lips, etc., the burning sensation of the mouth, the terrible suffering of the stomach, the retching, and vomiting of blood, etc. Medical advice must in any case of poison be called in with the utmost haste.

Poisoning by alcohol, or drunkenness. — Get the patient under cover as soon as possible. If insensible, rouse him by dashing cold water on the face. Endeavor to make the patient vomit. Rub the surface of the body with warm, dry cloths; wrap the patient in blankets; put hot water bottles to his feet, and do all you can to keep up the heat of body, which is always lowered in the state of intoxication.

Broken limbs. — The thing to be first done is to keep the limb quite steady till the surgeon comes. This is done by placing on each side of the broken limb whatever may be at hand, such as slips of wood, small pillows, an umbrella, the stock and barrel of a gun, or two walking sticks, or even firmly rolled straw, or pads of cotton wool, and retaining them in their position by one or two handkerchiefs, not tied too tightly. Never raise the patient from the ground until the nature of his injury has been ascertained, or some appliance has been made to prevent the movement of the broken limb. Then raise him, if possible, with the help of several persons, and, as it were, in one solid piece, all moving together, and keeping step in carrying. If a patient has to be carried home, let it be on a shutter, or a table, or a stretcher, on which he can lie flat, instead of being doubled up in a cab as is often done. It is from neglect of this simple rule that broken bones are often made to protrude through the flesh, simple being thus turned into compound fractures, attended by the risk of the limb being lost.

Restoration from drowning. — The directions for restoring persons apparently drowned would take up too much space for such a book as this, but they can be got from the Royal Humane Society, and should be in the possession of all persons specially exposed to risk, or likely to deal with such cases.

What to do when dress catches fire. — The following are the directions given in Dr. Robert's book on ambulance work: "If your own dress, throw yourself at once on the ground, so that the rising flames may not catch the upper part of your clothes nor burn your head and

chest; roll about (so putting the flames out by pressure), and at the same time, if possible, wrap yourself up closely in a rug, hearth rug, blanket, table-cloth, overcoat, or carpet, so as to smother the fire. Do not get up to call for assistance, but for that purpose crawl to the bell-rope or door. If another person's dress, throw the person on fire down at once, wrap him or her up in a rug or something similar, or, if there is nothing at hand suitable, use your own coat, rolling the patient about in it, for the purpose of smothering the flames." A woman rendering help in this way must exercise great self-possession, and be careful not to get her own clothes entangled in the flames.

Measles and scarlet fever.—When measles or infectious diseases are prevalent in a neighborhood and a child shows symptoms of cold in the head and fever, it is a reason for immediate carefulness. The diet should be light, cooling, scanty, and the child should be kept indoors. In its ordinary course measles is unaccompanied by danger, but the mildest form may be quickly converted, by want of care, into the most dangerous. The parent should carefully watch the symptoms of change, and if a child complains of piercing headache, intolerance of light, etc., the doctor should be called in at once. It is also most dangerous to resort, without advice, to spirits and such remedies to bring out the rash if it suddenly disappears. Sometimes the disappearance of the rash may be traced to careless exposure to cold. In this case the child should be instantly, and without hesitation, put into a warm bath, care being taken to prevent subsequent cold. Often, however, the cause of the disappearance may be dependent on internal inflammation or too high fever, and medical advice should be at once procured.

Indigestion.—Among the most common causes of indigestion are the undue use of strong or too long infused tea (which, taken without food and in excess, is destructive), the use of new bread, and eating too fast.

Teeth.—If people wish to preserve their teeth they should brush them, especially at night, gently with a short, soft brush, moved up and down so as to remove remnants of food, etc., lodging between the teeth, and so destroying the enamel. This precaution involves little or no expense, and the trouble will be well repaid. When iron tonics or acid mixtures have to be taken they should always be sucked through a glass tube, which can be got at any chemist's for a penny or two. Doctors often forget to remind patients of this, and, in consequence, the teeth grow prematurely black or loosen and decay.

Recovery from sickness.—When patients are recovering from measles and scarlet fever the greatest care must be taken to avoid chills. From the neglect of this precaution after-consequences of the most serious character often occur. Children recovering from these illnesses should be warmly clothed and kept out of cold draughts until they have quite regained strength. It is also the duty of parents who have children suffering from the above diseases to prevent healthy people from coming near them, particularly in the case of scarlet fever, until the stage of peeling of the skin is quite over, when the patient should be well washed with carbolic soap. The bed and bedding should be disinfected as well as the clothing.

Intoxicating drink.—The abuse of intoxicating drink is the curse of this country. It is the fruitful parent of crime, disease, premature death, and domestic misery in every shape and degree. The judges, with one accord, say that if the people could only be made to abstain from the use of intoxicating drinks more than half the prisons might be shut up. Men and women who are tempted to sin in this way should abstain entirely. For these there is but one rule of safety—taste not, touch not. Industry, thrift, and strict temperance, these are the simple rules which, by the divine blessing, secure health and lasting happiness.

ARGENTINE RAILWAY RETURNS.

REPORT BY MR. VILAS, SECRETARY OF LEGATION.

I forward herewith certain figures taken from the report upon the railways of the Argentine Republic for the year 1888, prepared by Mr. Cortinez, under the direction of the national railway board recently created.

The report itself, which is too voluminous for translation, will be transmitted to the Department as soon as received.

Amount of railway capital in country in 1888, $220,746,247; gross earnings, $26,526,707; working expenses, $15,529,993; net earnings, $11,500,000.*

Net earnings of Argentine railways for 1888.

Railways.	Capital.	Returns.	Expenses.	Net.
Buenos Ayres and Rosario	$33,330,000	$3,312,882	$1,577,280	$1,735,603
Primer Entre Riano	153,839	11,005	10,453	552
Central Argentine	18,648,000	3,815,325	1,798,113	2,017,212
East Argentine	4,989,615	271,185	269,882	1,303
Argentine Great Western	16,984,800	897,791	1,366,774	.....
Central Northern	26,990,342	2,367,941	1,594,638	773,303
Province of Buenos Ayres	27,474,283	4,867,550	2,873,622	1,993,928
Andine	4,366,565	441,024	284,182	156,842
Central Entre Riano	6.000,000	261,394	278,235	.....
Buenos Ayres Northern	2,991,487	735,325	365,854	369,471
Ensenada	6,681,885	1,152,791	552,843	599,948
Great Southern	40,320,000	6,172,033	2,782,847	3,389,186
Oeste Santa Fecino	3,000,000	277,015	336,903	.....
Santa Fé Colonies	9,839,088	801,946	615,256	186,690
Northwestern Argentine	4,273,920	12,267	12,267	.....

The following loans were made: Argentine Great Western, $468,983.51; Central Entre Riano, $16,841.43; Oeste Santa Fecino, $59,888.65; total loans, $545,713.58.

The rate of returns upon capital is as follows:

Lines.	Rates of returns.	Lines.	Rates of returns.
	Per cent.		*Per cent.*
Buenos Ayres and Rosario	7.04	Pacific Railway	2.16
Primer Entre Riano	0.35	Andine	3.05
Central Argentine	10.82	Northern Railway	12.35
East Argentine	0.26	Ensenada	8.96
Central Northern	2.86	Great Southern	8.41
Province of Buenos Ayres	7.86	Santa Fé Colonies	1.90

The number of passengers carried in 1888 was 9,681,233; tonnage of goods, 3,937,534.

HENRY L. VILAS,
Secretary of Legation.

UNITED STATES LEGATION,
Buenos Ayres, July 22, 1889.

* Argentine peso dollar = 96.5 cents American.

GERMAN CROPS IN 1889.

REPORT BY CONSUL WAMER, OF COLOGNE.

According to the recently published official report by the Royal Prussian statistical bureau, the yield of the cereal crops, taking 100 as the average, in the Kingdom of Prussia in 1889 is estimated at the following percentages: Winter wheat, 87; winter rye, 87; summer barley, 82; oats, 85; peas, 84; beans, 82; vetch, 83; buckwheat, 90; lupine, 80; potatoes, 100; winter rape, 65; hops, 70; clover, 96; hay, 104.

Taking the separate provinces in Prussia, the average yields are as follows:

Provinces.	Winter wheat.	Winter rye.	Summer barley.	Oats.	Potatoes.	Hay.
East Prussia	60	65	79	83	109	85
West Prussia	82	80	86	86	86	90
Brandenburg	77	72	67	70	90	100
Pomerania	85	83	74	76	100	99
Posen	78	73	61	74	98	99
Silesia	76	76	68	69	88	92
Saxony	88	92	87	95	99	105
Schlesweg-Holstein	102	98	84	76	90	114
Hanover	94	93	87	88	101	111
Westphalia	94	97	86	89	102	105
Hesse-Nassau	95	91	88	86	100	108
Rhineland	109	104	96	107	113	119
Hohenzollern	106	113	106	106	105	127

The above estimates show that the yield of winter wheat in Prussia in 1889 is 13 per cent. below the average and 4 per cent. below that of the preceding year. Only with potatoes and hay has the average been reached, which is 100 and 104, respectively. The average yields in the year 1888 were as follows: Winter wheat, 91; winter rye, 78; summer barley, 94; oats, 96; peas, 94; beans, 93; vetch, 91; buckwheat, 87; lupine, 93; potatoes, 96; winter rape, 77; hops, 83; clover, 79; hay, 82. With the exception of barley, buckwheat, potatoes, clover, and hay, the crops were decidedly better in the year 1888 than the current year.

Of all the crops raised in the Empire of Germany the hay crop seems to have suffered the most in the last decade, as will be seen from the following quantities in tons harvested during those years: 1887, 16,362,238; 1886, 17,903,338; 1885, 15,884,187; 1884, 17,350,503; 1883, 16,872,607; 1882, 17,776,125; 1881, 17,140,545; 1880, 19,563,388; 1879, 21,076,490; 1878, 24,163,403.

The hay crop, therefore, in 1878 amounted to 24,163,403 tons, against 16,362,238 tons in 1887, showing a decline of 7,801,165. The highest yield in wheat for the same period was in the year 1887, which amounted to 2,830,804 tons, and for rye in 1887, which amounted to 6,919,667 tons.

The following official figures represent the yield of the crops in the German Empire for the past ten years:

Year.	Wheat.	Rye.	Barley.	Oats.	Hay.	Potatoes.
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*	*Tons.*
1887	2,830,804	6,375,734	2,205,504	4,301,407	16,362,238	25,272,998
1886	2,666,423	6,092,849	2,337,206	4,855,894	17,903,338	25,143,229
1885	2,599,271	5,820,095	2,260,645	4,342,357	15,884,187	27,953,643
1884	2,478,883	5,450,992	2,229,598	4,236,665	17,350,503	24,019,601
1883	2,350,878	5,600,668	2,131,202	3,718,469	16,872,607	24,906,431
1882	2,553,447	6,390,407	2,256,335	4,508,056	17,776,125	18,069,332
1881	2,059,139	5,448,404	2,076,160	3,759,789	17,140,545	25,491,022
1880	2,345,278	4,952,525	2,145,617	4,228,128	19,563,388	19,466,242
1879	2,278,696	5,562,435	2,057,358	4,264,255	21,076,490	18,904,596
1878	2,607,186	6,919,667	2,325,227	5,040,240	24,163,403	23,592,781

The import of wheat into Germany in 1887 amounted to 547,255 tons, in 1886 to 273,279 tons, in 1885 to 572,423 tons, and in 1884 to 754,511 tons. The export for the same periods amounted to 2,839 tons in 1887, 8,293 tons in 1886, 14,080 tons in 1885, 36,193 tons in 1884. By adding the import to the production, less the export of wheat, it shows that there were left for consumption in Germany in 1887, 3,375,220 tons; in 1886, 2,930,409 tons; in 1885, 3,157,594 tons; and in 1884, 3,197,201 tons. Of rye the amounts left for consumption, that is, plus the import less the export, stand as follows: 7,010,140 tons in 1887, 6,652,220 tons in 1886, 6,585,775 tons in 1885, 6,416,265 tons in 1884. The grain-producing states of Germany are the Prussian provinces and the Kingdom of Bavaria.

EMIGRATION.

These provinces likewise furnish the largest contingent of German emigration to the United States. For instance, out of a total of 76,757 Germans that emigrated to the United States in 1888, the Prussian provinces and the kingdoms of Bavaria and Würtemberg furnished 66,870. The Rhenish province being chiefly industrial, it furnished only 1,183 emigrants for the United States in 1888.

WM. D. WAMER,
Consul.

UNITED STATES CONSULATE,
Cologne, August 23, 1889.

Russian petroleum in Java.—Under date of July 6, 1889, Vice-Consul Wopalenski writes as follows from Batavia: About 300,000 cases of Russian petroleum from Batoum are expected between now and August 1, a quantity which will doubtless greatly influence the Java petroleum market, inasmuch as the monthly consumption of the whole island only amounts to about 160,000 cases. The contents of a case of both American and Russian petroleum is the same, two tins of 10 gallons. Some of the above Russian

petroleum has already been sold on delivery to retailers at 40 Java cents (about 16 American cents) per case cheaper than that at which American petroleum, imported in sailing vessels, can be bought. If the Russian oil proves as good as the American, competition will be the result. I will report result at the earliest possible moment.

Under date of July 20, 1889, Mr. Wopalenski reports the arrival at Batavia of some thousand cases of Russian petroleum. The brand is the "Anchor." The leakage during the voyage was very little. The oil has a clear white color and gives a good light. The tins are of "Chester" model, provided with high top screws, like Devoe's tins. The wood cases are inferior in quality to the American cases. This petroleum has been sold to consumers at 4.20 florins per case (1 florin = 40.2 cents American), whilst Devoe's is quoted at 4.40. This makes the Russian oil 8 cents per case cheaper than the American.

THE HOP CROP OF 1889.

REPORT BY COMMERCIAL AGENT HAWES, OF REICHENBERG.

An important article of export from Austria-Hungary to the United States is hops. These come principally from the Prague district, but Vienna has also its share of the trade. In 1888 were exported to the United States from the consular district of Prague $56,284.51, and from Vienna $24,399.39, making a total of $80,683.90 worth of hops exported from the monarchy to the United States in this period.

While Austria is a large grower of hops, its neighbor, Bavaria, is perhaps its greatest rival in this trade, and the following report of the Nuremberg firm of Adolph Lehmann, successor, dated August 18, will not be without value to those interested in the cultivation and use of the article in question.

The excellent crop prospect has become a fact. We have to report an extraordinarily early and very abundant crop, and the quality of Bavarian hops of this year will answer all demands. During the whole period of growth the weather was as favorable as could be imagined. The plants were healthy, and as, happily, the warm weather has extended up to harvest time, and the growers are doing their best to secure a good picking, the result of the hop crop of Bavaria in regard to quantity, as well as quality, leaves nothing to be desired.

Of the various districts Spalt produces a two-thirds crop; Hollerdan, which crop is especially preferred, three-quarters of a crop; Hersbruck, Altdorf, and Laufer, as well as the Aischgrund district, have also two-thirds; the mountains, three-fourths; and, finally, Forchheim-Bamburger a full half-crop.

In centners, Bavaria, on the right of the Rhine, produces over 300,000 (33,000,000 pounds); Hollerdan alone produces about 100,000 centners (11,000,000 pounds). Our neighbors—Würtemberg, Baden, Alsace, and Lorraine—will produce at least more than the average, while Posen and Prussia will scarcely produce half a crop. Germany, as a whole, will have far more hops than can be used, and its surplus must be exported.

From the Bohemian districts the growth of Saaz is especially preferred. According to the estimates received at the hop exchange of Saaz, the product of this district will reach 50,000 to 55,000 zollcentners, which is an excess of 15,000 to 20,000 centners over last year's results, and is a full two-thirds crop. The quality is excellent, and we recommend earnestly a most careful picking.

Auscha will this year play no important rôle. The plantations there were damaged by insects, the growth is backward, and last month a hailstorm unfortunately visited the best localities which have given to the Auscha hops their good reputation. The inferior localities and mountain districts will profit somewhat from the present good weather, but the combined crop of the Auschan rothland will scarcely reach 10,000 meter centners.

The Daubaer Grünland will also not amount to much, and will not produce more than one-quarter of a crop. All the other parts of the Austro-Hungarian monarchy devoted to hop cultivation will show a falling off from last year. The qualitative results of Galicia and Steyermark are satisfactory. Upper Austria looks the worst, for this locality will scarcely gather 2,500 meter centners. The whole of Austro-Hungary will produce about 60,000 meter centners; enough, indeed, for home use. What it exports to England and Germany must be replaced by importations from Bavaria. France and Belgium have half a crop.

The European continent, then, will produce more than it can use, and when we refer to the latest reports from those important markets, England and America, there seems little hope of an active exportation to the latter. North America will not only supply its own needs, but will make us a competition in the markets of Great Britain to the extent of 50,000 bales. The crop of England, according to our reliable private reports, will not exceed 400,000 cwt. The amount required, estimated at only 550,000 cwt., leaves a deficit of 150,000 cwt. It may be concluded that America, as well as England, has but little left over from last year, while the considerable stores of 1885 are not to be considered, on account of their little value for brewing.

We therefore reach the following gratifying conclusions: On account of the very full crop we will have to reckon only on cheap prices; that there will soon be a strong demand, as the old hops on the Continent, as well as in the English and American breweries, are nearly exhausted; that, as England's crop can by no means meet the demand, we will be able, through very early packing and excellent quality, to compete successfully with America in the London market; and, finally, experience has shown that the consumption in cheap years is proportionately greater, which will be especially the case this year on account of the excellent quality of the goods.

A very lively business may be expected, and we only hope that our market will not, as in the last two years, fall into confusion at the wrong time and without reason, which would be followed by a strong reaction. We must at the right time be cheap enough to win the English market with our surplus. Then our wares, in spite of the overfull crop, will find a market, and prices will remain firm.

JNO. B. HAWES,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Reichenberg, August 21, 1889.

MEXICAN RAMIE FIBER.

REPORT BY MINISTER RYAN.

Believing the matter to be of special interest to the textile industries of the United States, I have pleasure in forwarding herewith to the Department a box of samples* of the fiber of the ramie produced in Mexico: one skein of ramie (three tints); three skeins of ramie, Aguascalientes; four skeins of ramie, Michoacan; one skein of China fiber, Tabasco; samples of which it has been found impracticable to retain in the legation.

From a well-informed and trustworthy source I gather the following information: That the plant can be profitably produced in every state of Mexico,

*Sent to the Department of Agriculture.

where from three to five healthy crops may be obtained annually, whereas in France, Italy, Austria, and Spain but two crops are grown annually. In this country its cultivation will yield greater profits than cotton, sugar, or the cereals. In Europe this fiber is, to some extent, taking the place of cotton, linen, and other textiles in the fabrication of many kinds of goods. It is believed by well-informed persons that the growing demand for it will keep pace with any increase of production possible.

The interest in its cultivation in this country is increasing, and it is believed that the export of it, in the near future, will aggregate many millions of dollars annually. A company recently organized in this city for the prosecution of this industry is about to make very large expenditures for machinery for the preparation of the fiber.

The interest of France, Italy, and Austria in the industry is manifest from the fact that since 1886 they have been offering rewards for the best machinery for treating ramie. Two machines for this purpose are at the Paris Exposition contesting for first prize, namely, the Passier and the Michote. There is also another in Austria highly recommended by manufacturers; and still another, invented by an American engineer named Brown, adapted to the treatment of fiber generally, is said to have much merit.

THOMAS RYAN,
Minister.

UNITED STATES LEGATION,
Mexico, August 29, 1889.

AGRICULTURE AND AGRICULTURAL MACHINERY IN RUSSIA.

REPORT BY CONSUL HEENAN, OF ODESSA.

GRAIN TRADE.

The condition of the Russian grain trade is such as to cause the future of our farming population much anxiety. The quantity and quality of all Russian cereals has made rapid advance during the past five years. Wheat occupies the first place in the list of exports, one-half of the total quantity falling under this head. The wheat crop of 1888 was enormous in quantity and of fair quality. The total shipment of wheat for 1887 from this port was 20,179,566 bushels, for 1888 it was 34,391,933 bushels, an increase over 1887 of 14,221,367 bushels. These figures will give an idea of the magnitude of the future of the Russian grain trade, and will prepare other countries for the augmentation of Russian exports. Southern Russia is essentially an agricultural region, and is but sparsely settled. Labor is cheap, and the method of farming is not up to the most advanced standard. Transportation facilities are very poor and for the most part expensive. It is estimated that millions of bushels of grain are lost annually on account of the failure of railways to afford transportation facilities or shelter for grain brought to them for transportation.

The grain interests of Russia have hitherto received but little attention from the proper authorities, and an amount of mismanagement and neglect is tolerated on the part of railways which annually subjects the farming population to great losses.

The harvests of the past two years were exceptionally abundant, but the railways were quite unprepared to provide for the transport of its ample produce.

The economic state of Russia, in spite of the abundant harvests of the past two years, is not a satisfactory one. The beneficial effect of these harvests upon the peasantry and population generally was not of so satisfactory a nature as might have been expected. Other countries as well as Russia harvested large crops, and the demand from abroad was limited. Prices fell, and the crop remained largely without being sold. The prices offered were below the cost of production, and the peasant, although having a large crop, derived but little or no benefit from it, having parted with his interest to pay off previous indebtedness during 1887–'88. In many places the people were living on the next summer's (1888) harvest and labor, which want had already compelled them to sell in advance. Owing to the mild weather during the latter part of 1887 a much larger area was sown than in previous years. This, together with the enormous yield, caused a scarcity of labor, in consequence of which prices reached as high as $4, and even $5, a day for harvest hands.

AGRICULTURAL IMPLEMENTS.

In many places large tracts of grain were left to rot down or fed to cattle, on account of the inability of the owner to pay the price of harvest labor. This condition of things, as might be anticipated, caused landed proprietors to turn their attention to the advantages to be derived from an increased use of agricultural machinery. The past year was a favorable one for the exporters of these implements, and the entire stock of binders and harvesters, many of which had been on hand for years, was easily disposed of.

The American harvesters, binders, and mowers are well known here, and enjoy almost a monopoly of the trade in these machines.

The English manufacturers enjoy a monopoly of the sale of portable steam-engines and steam threshing-machines, besides doing a good business in plows. The only foreign plows not English imported are from Germany.

RUSSIAN IMPLEMENTS.

Great progress has been made during recent years in turning out native-made agricultural machines. There are two firms in Odessa which manufacture an average of fifteen thousand plows a year. Horse threshing-machines are also turned out in large quantities, but a large trade is also carried on in these machines with Germany. The general use of agricultural machinery, such as harvesters and binders, can not be anticipated while the prevailing rate of human labor continues at its present low figure. The high prices of last year were exceptional, and 75 cents a day during harvest is considered high wages.

TRADE OF ODESSA.

The total imports for 1888 show a falling off from the previous year of nearly $1,000,000. The protective tariff, which is constantly being increased, is almost prohibitory. The total quantity imported during 1888 was greater than in the previous year, although the value was less. Agricultural implements, machinery, coal, cotton, and other articles were largely imported, both values and quantities showing an increase, with the exception of cotton. The crop prospects for the present year are unfavorable, and but half a yield is expected.

CROP PROSPECTS FOR 1889.

Throughout entire districts the winter wheat has been destroyed by the Hessian fly, and other cereals have suffered heavily. Spring sowing was damaged for the want of rain at the proper time, and will show but a poor return when threshed. The best opinion here inclines to the belief that the crop returns for 1889 will be much below the average.

THOS. E. HEENAN,
Consul.

UNITED STATES CONSULATE,
Odessa, July 25, 1889.

American machinery in Mexico.—Minister Ryan, under date of August 28, 1889, transmits, for the information of the Department, statistics of the value of American machinery imported annually from the United States into Mexico, from 1880 to 1887, inclusive, as compiled by Mr. J. Arce, a reputable dealer in such imports in the city of Mexico, who assures him that the figures given are approximately correct.

Importation of American machinery into Mexico.

Year.	Value.	Year.	Value.
1880	$462,384	1884	$1,685,887
1881	371,069	1885	2,230,780
1882	511,840	1886	2,869,400
1883	943,305	1887 (nearly)	4,000,000

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REPORTS

32838

FROM THE

CONSULS OF THE UNITED STATES

TOBACCO CULTURE IN FOREIGN COUNTRIES.

No. 107½.—AUGUST, 1889.

WASHINGTON:
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1889.

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CONSULAR REPORTS

ON

TOBACCO CULTURE, ETC.

No. 107½.—AUGUST, 1889.

BRITISH INDIA.

REPORT BY CONSUL-GENERAL BONHAM, OF CALCUTTA.

TOBACCO INDUSTRY IN INDIA.

Available statistics are very meager showing the extent and manner of tobacco cultivation in India, as well as the methods of curing the same and preparing it for market.

Like most other agricultural pursuits in this country, the cultivation and curing of tobacco are, I think, in a very primitive and undeveloped state, owing to the fact that they are mostly conducted by the poorer classes of natives. But of late years the agricultural department of the Government of India has been devoting some attention to this subject, as will appear by the appended report of Mr. Henry Scott, acting United States consular agent at Madras, which he has kindly furnished me at my request.

CHEWING AND SMOKING.

Chewing.—Tobacco chewing is a habit which does not prevail to much extent in India, either amongst the foreign or native population, except seamen who visit this port. Hence there is a very limited demand in the markets of this country for chewing tobacco of any kind, and it is very seldom that much of it is kept for sale in Indian tobacco stores.

Smoking.—Cigar and cigarette smoking are very prevalent amongst the European population, many of whom smoke the pipe also, especially sailors and soldiers. For pipe smoking the tobacco is ready cut and prepared for use and is hermetically sealed in small tin boxes holding generally from one-fourth to one-half pound. It is very seldom that one sees in the tobacco shops of this country any natural-leaf plug tobacco for smoking purposes as in the United States.

CLIMATIC EFFECTS.

It is important for those who contemplate exporting tobacco to India to know that during the rainy season (from middle of June to the middle of October in this latitude) there is a very penetrating dampness, which permeates every susceptible thing in a short time that is not hermetically sealed against it.

Hence smoking tobacco, cigars, and cigarettes, if not so put up, "go bad," or become so damp and moldy that they are unfit for use if they should have to be carried through a rainy season.

Tobacco in the leaf is not shipped to India from the United States, so far as I know, although dealers with whom I have conversed think it might be so shipped without being materially affected by the dampness of the rainy season if packed in lead-lined boxes similar to those in which tea is shipped. I understand, however, that considerable quantities of American leaf tobacco are shipped to England and there manufactured into cigars and smoking tobacco and transshipped to this country.

INDIAN VS. AMERICAN TOBACCO.

Having been addicted to the use of the "weed" for a good many years, and having conferred with a number of other persons similarly situated here, I have no hesitancy in saying that the tobacco grown in India for some reason compares very unfavorably in point of quality with that produced in the proper tobacco-growing districts of the United States. I am inclined to think, from my limited knowledge of the manner of handling and curing tobacco in the United States and in India, that the natives of this country are deficient in the art of curing tobacco, and its defective quality is attributable, in a great measure, to that fact. I am also supported in this opinion by the appended report of Mr. W. Wilson, commissioner of agriculture, etc., of the Madras Presidency, who kindly allowed United States Consular Agent Scott to copy the same in his report to me, hereto appended and hereinbefore referred to.

Most of the cigars manufactured in this country from Indian tobacco are very cheap and of inferior quality, the retail prices ranging from about 45 cents to $1.50 per hundred. Yet they are much better cigars than a stranger would expect to get for the price, and many well-to-do people in India have become accustomed to use the better kinds of country-made cigars; but choice Manilas, European cigars made from good American tobacco, and Havanas (so called) retail in this market at from about $5 to $15 per hundred.

I am indebted to Mr. A. Sutherland, of the firm of H. J. Meyers & Co., tea and tobacco merchants and grocers, of this city, for a number of valuable facts and suggestions on the subject of tobacco cultivation and trade in India, and have been kindly furnished by him with the loan of a book entitled "India in 1887, as seen by Robert Wallace, professor of agriculture and rural economy in the University of Edinburgh." Professor Wallace traveled extensively over India in 1887 and made careful observation of its agricultural methods and productions, and in his book devotes a chapter to

the tobacco industry, from which I quote the following, commencing at page 234:

Tobacco is very generally grown throughout India, but common tobacco is of coarse, thick-leaved, inferior varieties, and, as a rule, cultivated solely for local consumption. The native population use it extensively for smoking. Only in certain districts is it used as an ingredient to chew along with betel leaves. From the last returns (for 1886), which include Lower Burmah but exclude Bengal and Ajmere, the area of tobacco cultivation extended to 362,000 acres. The total export of tobacco, including cigars, was 10,000,000 pounds. The character of the soil, and also the manipulation in curing and preparing the leaf, affects the sample in almost an incredible degree. Very few soils in India are at all, so far as they have been tested, capable of growing good tobacco, and very little is known of the methods suitable for preparing it for the English market. Climatic circumstances are adverse to its easy manipulation and demand the expenditure of large sums of money to overcome the exigencies of the weather. Though admitting all those difficulties, there is little doubt but that they can be overcome, and that when knowledge extends tobacco of very fair quality, suitable for the European market, will be forthcoming from India.

The one universal complaint against Indian tobacco is, that it remains wet and soft, does not season properly when made into cigars, and is, in consequence of this and other defects in composition or character, difficult to burn. While growing it gets covered with dust or sand, which materially lowers its value through inducing improper fermentations and bad smells as the process of manufacture is proceeding.

Hand rolling is found to serve a better purpose than rolling by machinery in India, as, with the condition and character common to Indian tobacco, the latter system is apt to turn the cigars out too firm, with the result that they do not draw freely, and this, associated with the want of burning power in Indian tobacco, is ruinous.

The wages of expert rollers, who had been brought from Madras, were 33 cents per day. Boys were getting 16½ cents per day; but it is expected that the wages of local workers, when trained, should not exceed half the sums named. A good roller, with a boy arranging the packing material for him, turns out about two hundred and fifty cigars daily.

* * * * * * *

The prices of Naviad cigars vary from 24 to 99 cents per hundred; for ordinary sizes the range is between 33 and 66 cents.

At Dindigal, John Heimpel, a Hungarian, has made the greatest financial success in growing tobacco for European consumption. He has, within the last nine years, built up a trade in cigar making which employs three hundred men in the rolling department. The great secret of his success is that he is thoroughly practical, having mastered the German methods of working before leaving Europe. He has carried out a system, not of substituting European for native practices, but of improving the native methods of growing, curing, and manufacture by the light of his superior and more extensive knowledge. He arranges with the ryots (farmers) to grow the leaf by their own methods, but under his direction and advice. The difficulty of the leaves becoming covered with sand or dust is got over by planting hedges for shelter and keeping the plots small.

PRICES OF AMERICAN TOBACCO IN INDIA.

The retail prices of American cut tobacco for pipe smoking in this market are about as follows:

	Per pound.
"Old Rip," in half-cans and quarter-pound tins	$0.90
"Rough and Ready," in half and quarter pound tins	1.32
"Richmond Gem," curly cut, fine cut gold leaf, mild flavor, in quarter and half pound tins	1.48
"Richmond No. 1," straight cut smoking tobacco, cut from the finest Virginia gold leaf, in quarter-pound tins	1.65

	Per pound.
"Mild Richmond Gem," for pipe or cigarette, in quarter-tins	1.48
"Sunlight," long-cut Virginia gold leaf, in quarter-pound tins	1.00
"Old Judge," sun-cured Virginia smoking tobacco, in quarter-pound tins	1.65
"Mild Old Judge," in quarter-pound tins	1.65
"Guinea Gold," ("Old Judge" companies), in quarter-pound tins	1.32
"Old Gold," coarse cut best gold leaf, in half-pound bottles	1.48

Pipe smokers in Calcutta generally concede that the tobacco produced in the United States, and especially that which comes from "Old Virginia," is the best to be found in the markets here; and intelligent tobacco growers in this country with whom I have conversed on the subject think that the quality of Indian tobacco might be vastly improved by the employment of expert Americans to superintend the growing, curing, and manufacture of the same in this country.

I believe that by proper efforts the tobacco export trade from the United States to India might be materially extended, as there is no import duty on tobacco here, and the superior quality of American tobacco is well established. Yet those concerned in this trade should bear in mind that a very large majority of the people of India who use tobacco are too poor to buy the superior and higher-priced article, but will content themselves with using Indian tobacco, which they can purchase in the leaf for from 5 to 15 cents per pound.

Statement showing the imports and exports of tobacco into and from India during the year ended March 31, 1888.

IMPORTS.

Whence imported.	Quantity.	Value.
Unmanufactured.	*Pounds.*	
United Kingdom	20,278	$3,729
Malta	830	350
Turkey in Europe	12,557	2,431
Mauritius	70,994	4,798
Ceylon	513,856	18,773
Straits Settlements	11,753	7,928
Turkey in Asia	2,465	484
Other countries	68,176	1,237
Total	700,909	39,730
Manufactured—cigars.		
United Kingdom	22,804	27,496
Austria	1,704	1,581
Belgium	525	470
France	815	1,503
Holland	1,076	911
Malta	4,201	6,639
Egypt	5,172	10,381
Ceylon	2,563	3,699
China (Hong-Kong)	5,901	4,688
Philippines	7,298	8,048
Straits Settlements	8,028	4,289
Other countries	862	1,083
Total	60,949	70,788

Statement showing the imports and exports of tobacco into and from Java, etc.—Continued.

IMPORTS—Continued.

Whence imported.	Quantity.	Value.
Other sorts.	*Pounds.*	
United Kingdom	492,083	$138,564
Austria	2,179	785
France	935	431
Malta	5,988	5,130
Egypt	11,505	26,098
United States	152,468	31,746
Straits Settlements	136,861	25,748
Other countries	2,857	880
Total	804,876	229,382

EXPORTS.

Whither exported.	Quantity.	Value.
Unmanufactured.	*Pounds.*	
United Kingdom	173,745	$7,030
Belgium	2,299,936	25,015
Holland	672,000	6,000
Mauritius	378,007	28,703
Natal	6,410	655
Réunion	12,570	1,529
Aden	5,370,801	204,789
Arabia	58,114	2,230
Ceylon	59,068	2,243
Maldives	88,605	4,431
Straits Settlements	1,757,680	57,801
Other countries	17,871	491
Total	10,888,807	340,917
Manufactured—cigars.		
United Kingdom	112,515	37,273
Austria	2,198	807
Italy	1,221	555
Malta	4,246	818
Spain (Gibraltar)	2,578	863
Zanzibar	2,364	482
Egypt	4,479	1,508
Mauritius	3,354	879
Aden	12,937	2,966
Ceylon	14,263	4,107
Straits Settlements	122,122	15,082
Australia	9,779	3,851
Other countries	4,773	1,586
Total	296,829	70,777
Other sorts.		
Aden	10,352	572
Ceylon	38,511	1,421
China (Hong-Kong)	2,737	464
Maldives	94,387	2,712
Persia	2,990	478
Straits Settlements	97,363	3,617
Other countries	8,479	540
Total	254,819	9,804

B. F. BONHAM,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Calcutta, June 1, 1889.

PRESIDENCY OF MADRAS.

REPORT BY ACTING CONSULAR AGENT SCOTT.

To give a general idea of the localities where the plant is grown and of the nature of cultivation I can not do better than quote from the Manual of Administration of the Madras Presidency, pages 292 and 293:

SOIL, CULTIVATING, AND CURING.

Tobacco is found, more or less, throughout the presidency, with the exception of Malabar and the hill ranges, but the chief localities of production are the alluvial lands of the Godavery district, where is grown the well-known "Luntra" tobacco (so named from the luntras, or river islands, on which it is cultivated), and parts of the Coimbatore and Madura districts, from which the Trichinopoly cheroot manufacturers draw their supplies of raw material. The plant is grown on almost every description of soil, from black loam to sand, and from irrigated land to high, arid sites. Alluvial lands are preferred, then high ground, and such places as deserted village sites and back yards of houses, the latter on account of the salts impregnating the soil, and also, probably, for convenience of position as regards manuring and watching and curing the produce. Of the more esteemed tobaccos used for European consumption, the best of the Godavery produce is grown on these alluvial lands, which receive rich deposits of silt in the river floods, and are out of the influence of the sea freshets, while the Dindigul tobacco is produced on a carefully cultivated red loam, to which an alluvial character has been artificially imparted. Some of the highest-priced tobacco is grown on rich, dry land under irrigation, but this, while suited for chewing, is too coarse in texture of leaf and too pungent in flavor for smoking. In some parts irrigation is practiced, and in others it is dispensed with. Only a small quantity of water is supplied to the plant, and, as a rule, not by gravitation, but by mechanical appliance, and preferably from wells of brackish water containing potassic salts. Excessive damp is prejudicial, and the seed beds and soil generally are superficially drained or stand high. The crop, while young, is gently watered by hand, and heavy rains detract from the quality of the tobacco, the tobacco grown on ordinary irrigable lands being generally inferior. The manures used are the droppings of sheep and goats penned on the land previously to cultivation, cattle dung and urine, ashes and sweepings. In Neltore salt earth is used. The manures are plentifully applied to all soils except alluvial lands. The seed is invariably sown in seed beds. The seasons of cultivation vary according to local climatic considerations. As a rule sowing commences after the local rains, from July to October, though tobacco is sometimes grown as a second crop, commencing in January. The site of cultivation is thoroughly plowed and manured; the seed germinates in some eight days after sowing, and the seedlings are transplanted in the course of some six weeks, on attaining a height of 5 or 6 inches, into holes a foot to a yard apart, sometimes in ridges, sometimes on the flat surface of the field. In some localities the seed beds and young plants are protected from the extreme heat of the sun by means of mats, etc., and all leaves, except ten or twelve, are nipped off to strengthen those left. The flowers are also promptly nipped off, with the exception of those purposely left for seed. The leaves begin to ripen in the course of some two months from transplantation, and as soon as one or two turn color the whole crop is collected. This is effected, generally, by cutting the stem with a knife, though in Ganjam and the alluvial lands of Vizagapatam the leaves are nipped off separately, and in part of Tanjore some leaves are first plucked in January, and the stem and remaining leaves cut down in May or June. As a rule, no second crop is gathered, and where the after-sprouts are collected at all they are of very inferior quality. The process of gradually drying and fermenting is effected by modes slightly differing in detail. In Neltore, for instance, the cut leaves are hung in the sun for two days, put into heaps, turned every two days, and ranged in layers for twenty days, during which time they are frequently turned. They are then tied in bundles, dipped in water, sweetened with date jaggery, and are then

ready for sale. In other parts, as in the Salem district, the plants are left a day or two in the field, then exposed to the sun and dew alternately for a week, then wrapped in straw and buried in the ground for a week, after which the leaves are stripped from the stem, made into bundles, placed in straw, and put under heavy weights with their ends exposed for six weeks, the piles in which they are laid being opened and turned every other day. In other localities the leaves, after drying in the fields for a day or two, are hung over poles or ropes, preferably in the shade, in regular drying-sheds or in the cultivators' houses, and subsequently stacked in heaps, which are opened out and pressed together again at stated intervals until the requisite curing is effected. Occasionally the leaves are sprinkled with jaggery-water or an infusion of the *Cassia auriculata* while drying, and in Coimbatore the festoons of leaves, after being strung, are hung up on the milk-hedge (*Euphorbia tirucalli*) to acquire thence a flavor. State interference has been suggested in the case of this industry, but the Government has decided otherwise. Such interference has not been found necessary with indigo or coffee, and it was relinquished in the case of tea when that industry had made much less progress than tobacco has at the present time. The tobacco grown in this presidency is at present inferior, but it seems clear that this is mainly due to the fact that there is a great demand for the coarse article, and that it is found to pay better to grow a large quantity of inferior leaf than to grow a smaller quantity of superior leaf. European capital would, however, doubtless improve the curing processes.

The Madras Government, in 1887, appears to have obtained the services of Mr. H. Caine, tobacco expert, to report upon the different localities, to conduct experiments, and to suggest improvements in the methods of culture. This gentleman on the 14th of September, 1887, submitted the following preliminary report to the board of revenue:

I arrived at Dhone in the Kurnool district according to appointment, where I met Mr. Benson, assistant commissioner of agriculture. From Dhone we traveled to Kurnool, inspecting the tobacco villages on our way. From information received from tobacco cultivators in one of the villages named Rámallakót it appears that the tobacco-seed used is sown down in flat beds about the end of June, fourteen days after the first rain, the land having been plowed four to five times beforehand.

Twenty cart-loads of cattle manure are then carted on the land and left for the rain to moisten; when well rotted it is plowed in. Sheep and goats are also penned on the land for two or three days on every 50 feet square of land throughout the year.

The manure is previously collected in pits during the year, and when the rains commence it is thrown on the land. When the soil has been well plowed over it is got ready for transplanting by having a sort of harrow with teeth placed conveniently apart drawn over the land to mark out the furrows where the seedlings have to be planted. The land is then left alone till the seedlings are big enough to bear transplanting.

The seed beds are prepared by being plowed up and leveled; the soil for these beds is not raised as in Upper India, but made flat; the seed is sown broadcast in proportion to half sand to half seed, at the rate of 28 tolas of seed per acre. The beds are then watered by hand, sprinkling from chatties, both morning and evening, daily.

The seed germinates in seven days and the seedlings are large enough to transplant in thirty to forty-five days.

Transplanting is done throughout the day when cloudy, the evening preferred; the largest-sized seedlings are preferable to the small ones, although both may be able to bear transplanting; seedlings which have leaves 3 to 4 inches long are selected.

When transplanted the plants are left pretty much to themselves; if after a fall of rain the surface cakes and hardens, a guntaka is run between the rows to break the top soil. About three weeks after transplanting the soil is worked round the plants with an iron instrument.

The plants are planted 2½′ by 2½′ apart and are topped (*i. e.*, flower-bud pulled off) when the plant is 2 feet high.

The outturn per acre is said to be 600 to 750 pounds; leaves large, 2 feet long by 5 inches broad. The tobacco is said to be ripe when brown spots appear on the leaf, and also when portions of the leaf crack when doubled up between the finger and thumb.

Grasshoppers and caterpillars do not appear to cause much damage. The most destructive pest seems to be a kind of worm which works up inside the stalk of the young plants (presumably the wire-worm).

When the tobacco plant is ripe the stem is cut off close to the ground, gathered together in rows, and left exposed for three days; after this period the plants are heaped up two plants high one on the top of the other. The most favorable weather for curing is said to be heavy dews at night with a hot sun during the day. The plants remain five days thus heaped up, when they are turned over and remain another five days. The plants are then removed under shelter, the stalks being still green but the midribs dry.

The size of the bulks (heaps) depends on the quantity of tobacco available; about 10 feet high by 5 feet broad seems to be the usual size. The heaps are covered round the sides and top with rice straw and palmyra leaves, the top being weighted down as much as possible so as to press the tobacco. After four days the heaps are opened and the plants shaken and cooled, then heaped up again, and so on whenever the heaps get hot; this continues for fifteen days. The tobacco is supposed to be properly fermented when the leaves turn red, which color appears the most desired. After fifteen days the leaves are stripped from the stalk and tied up with anything available, plantain leaves, etc. About ten leaves go to make one bundle. The leaves are then heaped up for one month, opening when hot and cooling till disposed of. The cultivators informed me that tobacco was grown once in four or five years on the same land, grain crops being grown in the meantime.

The soil in this village is of a black, clayey, tenacious character, difficult to work properly, much too retentive of moisture to grow tobacco of a light quality. I was shown some tobacco of the former year's crop which had been cured as above stated, but it was poor stuff, uneven in color and no texture, torn, moldy, and streaky, only suitable for the native market. I also saw some leaf which had been shade-cured by a native. There was no difference in the color and appearance of the leaf. The latter had been valued at a higher rate than the former.

In another village in the same district I inspected a field where no manure had been used. This soil was of a light-red color. This might have grown good tobacco if proper care had been bestowed on the preparation of the land, but the work had been carelessly done, the land being full of weeds and unbroken lumps of soil.

The seed beds at this place had been sown down in the middle of July, the seed having been previously soaked for five days. This seed germinated in three days after sowing, the outturn estimated to be about 500 pounds to the acre. The curing in this village differs but little from the process already explained, except that the plants are kept a few days longer exposed in the fields after cutting.

Some tobacco was being transplanted at the time of my visit. This was done by making a hole in the ground with the finger and pressing the root of the seedling (which should be put in straight) down with the thumb, thus damaging the top root. In this way so many plants die that transplanting has to be done two or three times over. In another village visited the land was prepared in the same way, the soil being of the same black, tenacious character, the amount of manure used being about 4 tons to the acre. The manuring depends on the amount available. I think 10 tons per acre of old manure is about the maximum used.

The curing of the tobacco plant throughout the Kurnool district is much the same, the object being to obtain a red and dark-brown color. Some samples of the former year's crop were shown me here, but the leaf would be of little value for the European market, owing to defective curing, the leaves being coarse, ribs thick, uneven in color, little gum, and not fermented enough. I left written instructions at this village about curing in the shade.

In another village named Gani, in the same district, some of the soil was of a lighter character, and more suitable for tobacco than any of the others which I had seen. Some of the black cotton lands in this village had also been taken up for tobacco. The lands there are

plowed up during the mango showers in April and harrowed over, the collected manures being placed in heaps about the fields. As soon as the soil is in a condition to work a small plow is used to work in the manure. Sheep and goats are also penned on the land. The growing crop is treated in the same way as in Rámallakót, the flower-bud being pinched off when the plant is 2 feet high to insure large, heavy leaves. There is a slight difference in the method of curing pursued here.

The ripe plants when cut are left one night on the ground, the next day they are hung up on poles with rope till the midrib is dry. The rest of the process is the same. The outturn per acre is said to be 600 to 750 pounds, seven to ten leaves being left on each plant. Ten plants average 1 pound in weight. I saw some samples of the former year's crop; the leaves were much the same as the others which I had seen, the texture was good, leaves large and well formed, fairly gummy, color uneven, pale-red, burnt badly.

The conclusion which I have been able to come to (considering that I was unable to see any tobacco growing or curing) in the Kurnool district is, that I do not think cigar tobacco of quality can be grown in the way the leaf is treated by the natives. Only cow manure should be used; sheep and goat droppings form a manure too strong for tobacco, and would probably injure the flavor. The plants are also topped (*i. e.* flower-bud nipped off) when too small, a much finer leaf and smaller ribs would be obtained if the plants were permitted to attain 3 feet in height before topping, leaving twelve to fourteen leaves on each plant. The outturn per acre would be lessened in weight, but the finer, smaller leaves produced would more than compensate for this decrease by commanding a higher value as a cigar tobacco. A leaf thus grown and properly shade-cured would turn out a much better and finer cigar-wrapper of country tobacco than that which is at present used. The object of the cultivators in topping so low is to grow heavy-leafed tobacco, which suits the native market and brings them in a heavier outturn per acre. The distance the plants are grown apart would much depend on the richness of the soil. In rich lands the plants might be grown 2 by 2 feet apart. In ordinary land 2½ by 3 feet would probably be the most suitable.

The native method of sun-curing, as far as I could judge from the samples received, is defective in many ways. The curing by sun is much too rapid to obtain the clear brown color required for cigar-wrappers; there is also too much manipulation of the leaves when in a half-cured state; the leaves get doubled and become bruised and streaky and remain thus discolored; a good deal of dust accumulates on the leaves. A pale, reddish color is the result, which color becomes darker through fermentation. The native method of fermenting the leaves when in bulk can also be much improved. Some of the leaves get more fermented than others, owing to want of care shown in cooling and bulking; the leaves are rebulked into another heap indiscriminately, without paying attention to the outside plants of the first bulk, which should form the inside of the second bulk, and *vice versa*.

We left the Kurnool district on September 2d, and arrived at Madras on the 3d, left Madras on the 5th, and arrived at Trichinopoly on the 6th, where Mr. Benson and I visited several native cigar-makers. The method pursued by these different makers is identical as regards the making up of the cigar. In one or two places the Sumatra leaf (erroneously called Java) was used as an outside wrapper on account of the fineness of its leaf, color, and covering qualities. One of the largest makers used no Sumatra at all, the cigars being made up with country tobacco steeped the night before in jaggery-water. The cigars are all hand-made, but mostly too lightly made. All the Indian (country) leaf which I saw in the godowns of these makers was of a very large-leafed tobacco, very like "American seed leaf," formerly used in Europe for cigar-wrappers. The ribs, however, are so thick and large that the wrappers here are sometimes cut from between the ribs, two pieces of leaf thus cut are joined together and rolled around one cigar, the join is, however, easily detected. The tobacco used in the manufacture of these cigars is too new and rank. The idea appears to be to make up cigars of one-year-old tobacco, and then keep them instead of keeping the leaf tobacco two years or so and then manufacturing cigars.

What is really wanted is a medium-sized leaf of finer texture and of a better color, and this can be obtained in the way I have suggested, by letting the plants grow higher and by properly conducted shade-curing and judicious fermentation.

I have to remark that there is also a great deal of waste amongst the native cigar-makers in the way the cigars are made up. The cigar being hand-made nothing but long strips of leaf can be used up, the smaller pieces — an inch long or so, quite capable of being made into cigars — are thrown aside with odds and ends of Sumatra and sold locally for a mere nothing. In the use of wooden cigar molds all these bits could be used without deteriorating the value of a cigar. The cigars in several cases were badly made, burning too rapidly inside, while the outside wrapper would not burn at all, owing, in most cases, to two wrappers being used for the cigar instead of only one. A specially made knife would be of great advantage in cutting wrappers instead of using scissors which go clipping around a leaf instead of making one clean, straight cut. In some cases scissors may be used, in a large, thick-ribbed leaf, for instance, when only the finer outer edge is used for a wrapper, but these coarse leaves should not be used for wrappers. With the Sumatra leaf a knife should certainly be used.

One man is supposed to roll 300 cigars, medium-sized, daily. With the aid of molds an European workman can roll 400 to 500 medium-sized cigars daily.

Sumatra leaf costs the makers from 3 to 4 rupees per pound landed here. A pound of this leaf covers 500 cigars. A pound of country sorted wrappers will cover 400 cigars of same size.

The tobacco used in the manufacture of cigars in Trichinopoly comes from the Dindigul and Coimbatore districts.

Leaving Trichinopoly on the 9th instant we arrived at Dindigul on the same day.

Received following information from tobacco cultivators: The land is plowed in August after the first rains have set in; plowed seven times during the month. The lands are manured with cow dung, 10 tons to the acre; sheep and goats are penned on the land, 1,000 sheep an acre for two or three days. The seed beds are made flat, small bands on all sides to retain the water; soil properly prepared, the seed is sown broadcast; transplanted when seedlings 6 inches high. In rainy weather transplant all through the day. Seedlings are planted out 2½ by 2½ feet; irrigated every other day for two months. The flower bud appears in sixty to seventy days, and watered for fifteen days afterwards. The plants ripen in seventy-five days from time of planting. The curing is on the same plan as that pursued in Gani village in the Kurnool district. Brackish water preferred for irrigation owing to the salt in it. Land appears to grow good crops of tobacco, the outturn being 750 pounds per acre. The soil I saw was of an ash color; the best land I was told was of a red color. There was some of this 15 miles from Dindigul, which, owing to time being limited, I was unable to see. I went over to Mr. Heimpel's cigar factory; same manner of making up cigars as pursued by the Trichinopoly makers, although everything much cleaner. Mr. Heimpel also uses Sumatra wrappers on his superior cheroots. We arrived at Madura on 10th instant and visited the farm there, the soil of which is, however, too sandy and light for tobacco. Some samples seen there showed a nice, medium-sized leaf of good texture, quality and burning capability very inferior. Left the superintendent some seed and written instructions as to curing. From Madura we went to the Coimbatore district; the soil, from the little I could see, would suit fine quality tobacco very well; soil red in color and easily worked up. Sample of tobacco seen at Uttakali was very poor; of little value, round-leafed, thick-ribbed and not much gum. Some samples of tobacco received from Ristna are the best I have seen here; leaf medium size, veins and ribs fine, texture very good; with proper shade-curing should turn out a first-class tobacco for cigar-wrappers. Mr. Benson and I arrived in Madras on 14th instant. I should suggest that some arrangement may be made before I come down in August, 1888, so that some suitable place may be selected for teaching the natives shade-curing, which I am perfectly certain would greatly improve the country tobacco.

Subsequently the Government authorized Mr. Caine to lease a plot of land about 8 acres in extent, near Dindigul in the Madura district, with a view of making practical experiments for growing, curing, etc. The result of these experiments is not yet known, but a report upon them, together with a paper by Mr. Caine on the system and cost of growing tobacco in the Madura district, has been promised to me by the board, and will be communicated to you in due course.

Mr. Caine seems to have left some seeds of Maryland, Havana, and Vizagapatam tobacco to be grown and cured in the Madura district, and on September 4, 1888, he reported as follows:

I have visited the Madura farm and have also received samples of the tobacco cured here under my instructions. I much regret to have to point out that "Maryland" tobacco sample submitted has not been properly attended to; the leaf is much discolored and bruised through careless manipulation, the tobacco itself is rotten to the extent of 75 per cent. of the leaves, due to the tobacco being allowed to remain too long in a heated state, the leaves are black and rotten, especially the tips, where the heat would be most felt. I can make nothing out of the present state of the tobacco what the color and texture may have been before the rot was allowed to take place.

With regard to the Havana sample, I have much pleasure in stating that the quality is remarkably good, notwithstanding the poor soil the tobacco was grown in; this tobacco is ripe and well matured, fairly combustible, the texture of the leaf is poor, due to the poor soil; this tobacco would not do for wrappers, and is only suitable for the inside of cigars. This tobacco is also discolored through careless handling.

The Vizagapatam sample shows excellent texture, very elastic, and should turn out a capital cheroot-wrapper if properly cured and fermented; the samples submitted are much mottled, speckled with green and yellow, the leaves are very fine and elastic, with plenty of gum, ribs delicate; the quality is very light with but little flavor, which would, however, not affect its qualities as a cigar-wrapper.

I think it would be advisable to make experiments with seeds of this Havana and also with the Vizagapatam seed. I have samples of both in my possession.

The above is the only reliable information that I have been so far able to collect, the papers relating thereto having been obtained through the courtesy of Mr. W. Wilson, commissioner of revenue settlement, land, records, and agriculture.

EXPORTS.

Tobacco is exported from the east coast districts, the bulk of it going to British Burmah for the manufacture of cheroots. Owing to the inferior quality of the leaf it is not taken in any large quantity by Great Britain or other European countries, but I am given to understand that the trade with Europe is increasing, owing to improvements in the methods of curing and manufacture.

In 1882–'83 the quantity of tobacco exported appears to have been 7,045,569 pounds of the value of 1,384,135 rupees.

This trade was divided as follows:

Whither exported.	Quantity.	Value.
Foreign countries.	*Pounds.*	*Rupees.*
United Kingdom	50,170	27,157
Mauritius	218,655	40,270
Bourbon	39,750	13,275
Ceylon	73,980	16,739
Straits Settlements	460,043	64,462
Other countries	12,719	8,291
Total	835,257	179,194
Foreign ports in India	106,960	12,682
Interprovincial.		
Bengal	782,511	235,483
Bombay	149,596	40,173
British Burmah	5,156,122	906,571
Scinda	15,123	10,032
Total	6,103,352	1,192,259

It will be seen from the above figures, which are taken from the Manual of Administration of the Madras Presidency, page 345, that the bulk of the crop goes to other parts of British India, the Straits Settlements, and Mauritius. The figures do not extend beyond the year 1882–'83, and for the following figures of exports for subsequent years I am indebted to the board of revenue.

Exports of manufactured and unmanufactured tobacco from the Madras Presidency.

Description.	1883–'84.	1884–'85.	1885–'86.	1886–'87.	1887–'88.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Unmanufactured	1,150,447	1,018,442	1,227,503	1,141,547	1,863,957
Manufactured:					
Cigars	122,726	89,946	102,104	139,059	135,543
Other sorts	14,348	25,090	25,009	21,424	34,032

The difference between the quantity given as exported in the year 1882–'83 and 1883–'84 is so marked that it appears improbable that such an increase in exports actually did take place. It is more likely that the compiler of the figures in the Manual of Administration omitted to include some of the exports given by the board of revenue.

AREA UNDER CULTIVATION.

The area under tobacco cultivation from the years 1882–'83 to 1887–'88 was as follows:

Years.	Area.	Years.	Area.
	Acres.		*Acres.*
1882–'83	78,707	1885–'86	80,561
1883–'84	62,068	1886–'87	74,717
1884–'85	82,673	1887–'88	83,727

The chief tobacco-growing districts in the presidency are Ristna, Coimbatore, Godavari, Kurnool, Madura, Neltore, and Salem, in the order named.

Pending receipt of the further papers promised by the board of revenue, I am unable to give any particulars as to cost of production, but I hope to be able to send these before very long.

H. SCOTT,
Acting Consular Agent.

UNITED STATES CONSULAR AGENCY,
Madras, April 6, 1889.

STRAITS SETTLEMENTS.

REPORT BY CONSUL STUDER, OF SINGAPORE.

To show of what prominence the cultivation of tobacco is within the Straits Settlements and the Malayan provinces under British protection I need only mention that in the Market Report and Prices Current published by the chambers of commerce at Singapore and Penang tobacco does not even appear.

Now, one need not think that in a country with a constantly warm, moist atmosphere, and a grand, magnificent, luxuriant vegetation, as is to be found on the peninsula of Malacca almost everywhere, good tobacco can not be grown; for it has been and can be grown, and has even been exported to my certain knowledge in small shipments (about 40 bales in all) to Amsterdam and Rotterdam, to fix its standard and try its value, or, better said, the market, and brought, on the supposition that it was Deli tobacco—on an average of so few bales—as good a price as genuine Deli tobacco (it was grown from Deli seed), the average of the latter—of consignments of 200 or 300 bales—at the time being about the same, and in instances even a little lower. The party that planted this tobacco (not a British subject) in a Malay province, called "independent," in consequence of many petty annoyances and obstacles placed in his way and the display in general of an antagonistic spirit against this creditable enterprise, stopped planting tobacco. I shall show further on what I believe to be the true cause or causes of there being no extensive tobacco estates there, *i. e.*, the country on the Malay peninsula within my consular jurisdiction. The tobacco consumed by the native resident population (and that amounts to a great deal) is, no doubt, grown there by Malays and Chinese farmers near their houses, in gardens, in patches or small fields. This tobacco the growers don't cure; they don't know how, and there is no one to show them how. The leaf, after fair maturity, is cut and hung up to dry in their open attap houses. When they want to cut tobacco for use (they cut it very fine and all the tobacco used by them is "fine cut") they hang the dried leaves out over night to get the dew and thereafter just enough morning sun to a little more than half dry them, *i. e.*, to retain a little moisture so as to keep them limber or pliable without breaking; they roll them up

and cut them; women as a rule doing this work. As quickly as cut, while still moist, they pack it tight in a pot or tin, and in this state the tobacco is sold and used for chewing by both sexes with or without the addition of the "sirih leaf," betel-nut, and slacked coral lime. They also use it for cigarettes, called "socco," wrapped with fine, thin palm leaves in lieu of paper. I can not say that the socco ever found favor with white people, as a rule, because the palm leaf destroys the aroma of the tobacco; and the latter, not having been cured, is strong, sharp, penetrating. The smoke is unpleasant to the olfactories of one used to good, fragrant tobacco, and still more so to weak nerved or eyed persons. In pipes it is rarely if ever smoked; the Chinese smoke fine cut tobacco of a dark, brick-red color in pipes prepared in China and imported thence. The natives, *i. e.*, Malays and kindred races, are used to their tobacco, as described, and will not readily take to any other kind, except when serving as seamen, when they prefer our American plug tobacco to any other kind. The native fine cut and uncured tobacco, all considered, commands a very fair price in the bazars in retail, viz, from 45 to 50 cents (Mexican silver) per catty of 1⅓ pound.

The fact that tobacco has not been and is not being extensively planted within my consular district on the Malay peninsula I attribute, as above stated, to various causes, of which I will mention such as appear to me to be the most prominent ones, viz: When I came here in 1871 the colony of the Straits Settlements consisted only of the settlements of Singapore (island), Malacca, and Province Wellesley, with the island and port of Penang. The towns excepted, the largest portion of the country was in a most primitive state. In the settlement of Malacca rice was chiefly planted by the Malays and Chinese; also gambier, pepper, tapioca, cocoa-nuts, and fruits received attention. In Province Wellesley there were a few European sugar estates, and the rest of the country, where cleared, was devoted by native farmers, including many Chinese, to rice, sugar, cocoa-nuts, fruits, some nutmegs and pepper, and vegetables. The Malay provinces lying between or adjacent to the Straits Settlements, now playing such an important part as factors to the commerce of the colony, especially as regards tin, were then still independent and in most parts in a very primitive state. Villages or small settlements on the banks of rivers, with rice fields near them, formed the exception, the rest was forest or swamp. In certain parts tin mines worked by Chinamen were in operation, chiefly in Larut, a subprovince of Perak. All these provinces, voluntarily or involuntarily, were annexed, or, as it is called here, placed under British protection or suzerainty since 1873.

In 1871 in Deli, Sumatra, were already several large tobacco plantations. The pioneer planter, a Dutchman named Newishuys, commenced planting twenty-five years ago. The Sultan of Deli then, and until about 1872, was really independent; the Dutch Government had a very light claim on him as a suzerain, and before 1872 applicants for concession on which to plant could obtain the same from him without requiring the recognition of the Dutch authorities. The product therefrom had already the high reputation with

corresponding price it ever enjoyed. Though the pioneer planters up to that time had received very large concessions—the pick and choice of the country on the banks of the Deli River (all virgin forest)—a large area of land still remained open for cultivation and settlement, and neighboring provinces still remained untouched. This land was in the main alluvial, and all of it volcanic soil and exceedingly fertile. This, with the high reputation of the tobacco grown there, soon became known, and it was thought that volcanic soil not only caused the luxuriant growth of the plant, but gave the leaf a fine aroma and the great fineness of texture and elasticity for which it is known. Now, the pioneer planters and those coming soon after them, the majority of whom I became acquainted with in course of time, were not planters or farmers in the meaning of those words (most of them had been merchants or clerical employés); they knew either nothing at all about husbandry or had only a superficial light knowledge of it. They got the timber felled by contract by the native battaks, and hired hordes of Chinese coolies to burn it evenly and clean and clear the soil ready for planting. They were under contract to plant the tobacco at so much per thousand plants delivered at the tobacco drying-shed. They used to get, up to a very few years ago, from about $5 to $9 (Mexican silver) per thousand plants, which included the work of burning and clearing the jungle and planting and find themselves. What the planters had to understand (and learn) was the drying, curing, assorting, and baling of the tobacco, and they had to superintend all the work of the plantation in general.

The influx of new planters increased from year to year, and no one thought of taking land anywhere else but in Deli and neighboring provinces; and, as the Sultan of Deli had given concessions from the start to Europeans regardless of nationality, the Dutch, when they became the "protectors" of that country, had the good sense not to interfere with this arrangement, allowing alien (not Dutch) applicants for land to plant and reside as before. All the Dutch Government insisted upon was that no new-comer, be he Dutch or alien, should take a concession from the Malay chief of a province without their knowledge and their consent in writing. Every concession of new land had to be approved by the governor-general of Netherlands India; after the Dutch resident of the district has approved of it he forwards the document to the governor-general.

The majority of the planters grew rich in from ten to fifteen years, and many retired independent after careful, close application to their work, combined with fair health. The climate is not very salubrious, and many died or left health-broken. Such paying experience had not been had by the planters of other kinds of products in the same space of time, and Deli planters, after they had ceased to have new jungle soil for planting, and the land on which they had planted having become more or less exhausted, visiting portions of the west coast of British Malacca, being no good judges of soils—no farmers—when they failed to find land looking precisely as their volcanic Deli soil, not going over the land well at the same time, pronounced it as

unfit for tobacco planting; and when, in addition, they heard the governmental conditions upon which land could be had they left in dismay, especially when they were not British subjects, and were, of course, not in any way backward in making the results of their explorations known.

As stated, there are plenty of good lands, large tracts, too, in different parts of this consular district on which tobacco could be grown successfully, and the fact that the natives grow tobacco—fine, vigorous plants, as I myself have seen in different places grown without much special care—should be an inducement to the Government to encourage tobacco planting, and to planters of the British nationality to devote themselves to it, so long as aliens as a rule are not wanted as planters. Besides, people should be able to receive lands on easier and more reasonable terms from the Government. If this were done and aliens allowed to take lands, I think that they would avail themselves of it rather than go to more remote and isolated Borneo, where the land is not any more volcanic than Malacca and very likely not any better, from all I can gather, and where the cost of planting is considerably higher than in provinces hereabouts, which can draw on Singapore or Penang for labor and supplies at a smaller outlay of ready money. Excellent alluvial lands in large tracts are to be met with above overflow on the banks of rivers, and fine, rich loam lands on and between the gentle slopes of hills in Johore, Muar, Pahang, the "Nine States," Sungi-Ujong, Salengore, Perak, and Province Wellesley, just as good as high average American tobacco lands. Muar, Salengore, and Perak have long been especially noted for fine tobacco grown by natives. Natives of British India and China, being subject to absolute rule politically, are free to take land anywhere in British Malaysia, so long as they are able to fulfill the conditions upon which they acquired them from the Government. It is true that the British resident of Perak, who has accomplished much real good there, encouraged both Malays and Chinese to plant not only rice, but also maize, tobacco, coffee, pepper, etc.; and I heard about a year ago that in Perak and Province Wellesley some Chinese started small tobacco plantations on the Deli plain, and, later on, that a firm of English coffee planters in Salengore had commenced a tobacco plantation, but with what success I have not yet learned.

There are a few Englishmen in different parts of the colony and protected native states planting Liberia coffee, sugar, pepper, and tea, any one of which products, in order to be remunerative, requires fertile soil. These planters, too, with very rare exceptions, are not husbandmen, and plant by coolie proxy. Labor-saving machinery or implements they have none.

Now, in the Crown settlements of this colony a well-recommended alien with capital may be allowed to buy land, reside on it, and cultivate it; and as to acquiring real estate at Singapore or Penang, in or near town, there is no particular difficulty that I know of, but some barristers-at-law have doubted the right of an alien (that is, not a British subject) holding a title to real estate, and, on the whole, it is not much to the liking of the Government and a certain circle of British subjects that an alien should settle or plant away from town—in the country. If he becomes naturalized, there is no objection.

The Malay provinces of Perak, Salengore, and Sungi-Ujong are under British protection, provided with "residents" (British), and it might as well be said that they are British out and out, since all their own legislative acts have to receive the sanction of the governor of this colony. I am not aware of any aliens residing, planting, or carrying on business in any of said protected states, except in Perak, where a Frenchman was allowed to acquire tin-bearing land on behalf of a French syndicate, and to reside thereon as superintending manager of the tin mine he opened.

The sultanate of Pahang, a very large province, and long known to be immensely rich in gold, tin, and other minerals, and fertile in general, facing to the east, on the peninsula, and lying due north of the state of Johore, was quite independent up to about a year and a half ago, when it fell under British suzerainty, or "semi-protection" (had to take a resident), on a plan somewhat different from the said protected states. The Sultan was forced to it, because, as alleged, some British subjects (naturalized Chinamen) had either been killed and robbed there or otherwise not received proper protection. He had to sign a treaty, in which he had to bind himself to enter into no relations or correspondence with any foreign power, and to alienate no land in favor of an alien (not British) without the sanction of the colonial governor. The subservient Sultan of Johore was instrumental in bringing this treaty and annexation about. As to the latter, called "Sultan of the State and Territory of Johore" (formerly "maharajah," which title, and the subsequent one of sultan, he never received from his Malay subjects, but from the British Government), is somewhat differently situated, being still called "independent" and having no resident near his court (he is a British subject); but he is bound to the British by treaty in precisely the same manner as the Sultan of Pahang, and, besides, bound to be an ally, offensive and defensive, in case the British are at war, and the latter to him if he should get into trouble from any quarter. That is not all; it happened in the past that several of the Malay chiefs, while still independent, made concessions of land to both British and non-British, the lands granted being (or supposed to be) either rich in minerals or well adapted for growing sundry products. A precious few concessionaries were aliens, the great majority being British. These concessions were viewed with a good deal of jealousy, and the sequel was that, about four years ago, the colonial government issued a proclamation to the effect that, "in the event of any of the Malay provinces on the peninsula falling under British rule, the government would not consider itself bound to recognize any concessions of land previously made by the chiefs thereof," thus putting a "despotic cloud" on the title. The effect of this naturally must be a stifling of enterprise, for no sane man not a Britisher would risk capital, time, hard work, and, I may say, his life (in view of climate, malaria, and hardships) in opening a mine or a plantation while in doubt as to whether the title to his land will be recognized by the British if they annexed the province, which might happen any day. That this policy has stifled enterprise and caused it to drift to other places, not better or as

favorably situated, I feel certain. Aliens can carry on any kind of legitimate business, as well as British subjects, in and near the ports and towns of the colony, where they are under governmental surveillance; but they are not wanted beyond it, in the country, near or among the natives. And the same is true in Netherlands India, the Sumatra tobacco districts excepted, which, on either side, is not a great show of confidence in the loyalty of the natives.

Notwithstanding that the United States never sought nor seek annexations of foreign lands and islands, and would not countenance any intrigues or plans set on foot by citizens to bring any acquisition about—a fact well known abroad—American citizens, I have good reasons for believing, not only fare no better, but there appears not open but secret determination to keep them out, regardless of any amount of good they might be able to accomplish, be it by greater smartness and circumspection, energy, activity, better implements, tools, and labor-saving machinery, and the knowledge how to make it count. A long residence here has enabled me to become fully aware of this. It is strange that the people nearest related to the British by blood and language should experience such special antipathy in a British colony. Wealthy American travelers "around the globe," as a rule, don't stop long enough to become aware of this. They carry plenty of money with them; it is, as anywhere else, their sesame, and produces ready services, compliments, and polite bows. Masters of our mercantile marine have much better opportunities while discharging and loading to become aware of this, and occasionally mention it to me. The same spirit of coldness and jealousy, I have often enough heard from reliable sources, is equally manifest in Netherlands India. We have some good friends here and there as exceptions to the rule, but they can soon be counted.

I have alluded to this unfriendly spirit in more than one report from time to time. I mention it again as relating to the theme in the circular "Encouragement given by the Government to plant tobacco." It holds good to other products as well. At the same time I have no doubt the Government would like to see the wealthy Chinese engage in tobacco planting, and perhaps some of them would engage in it if they knew how to cure tobacco, or could get Europeans from Deli to show them how, for let it be understood that there is a sort of an understanding in Sumatra, among all the planters, to keep all Chinamen out of the curing sheds, not to let one of them learn the arts and secrets of curing tobacco. For the rest the wealthy Chinese are well versed in pepper, gambier, tapioca, etc., planting and preparing the products for market. In this they are very successful and make a great deal of money (some are immensely rich), and are fast outstripping the European merchants in wealth here and at Penang. The majority of the latter have no capital in the plantations, regardless of product, in this colony and adjacent protected states.

So, at present, my consular district, British Borneo excepted (on which I shall report further on, pending the question as to whether the Department considers it as belonging to any district), can not be called a tobacco-producing one, but I dare say it will be one, to a certain extent, before many years.

EASTERN SUMATRA.

I have described, in some of my reports some years ago the wasteful way pursued on the estates of planting only one crop on new virgin forest soil, and felling and clearing a fresh tract for next crop, and of returning to the same fields (remaining fallow) five or six years later, after having become covered with a new growth of jungle, and so on until the entire estate would become denuded of forest; that thereafter they applied to the Government (and received) for fresh tracts of land in the neighborhood; that they used no plows or other labor-saving machinery; that the axe and the hoe were the only implements used; that there were no real true agriculturists among the planters; and that, but for the influx of coolies from China, all their planting enterprises would become nil, since for clearing, cultivation, preparing for market they had to rely entirely on them.

All this is in a great measure true to-day; the same course is pursued on all new estates, because virgin jungle soil produces the best tobacco. On the old estates, however, they have changed tactics, having heavy capital at their disposal (several being Dutch stock companies); they kept on acquiring fresh tracts of land from the Government or partly improved estates from unsuccessful planters in their neighborhood as long as they could. But the steady influx of new planters, increasing from year to year, put an end to new soil within the sultanate of Deli, and neighboring provinces—nearly as large, or as large, and all under Dutch rule—had to be resorted to. A railway was also built from Labuan-Deli, the general place of export of all the planters, westward to a point near the base of the mountains, dividing East from West Sumatra, called Medan (now a thriving town). This railway was finished about four years ago, and opened a large tract of country. All the lands near it for miles have been taken up. Among the new-comers were some experienced agriculturists; the old estates secured their services, plows were introduced and used, thus turning from their old wasteful and primitive to more economical and modern ways. Instead of letting late tobacco fields go and remain fallow, they plow them up, mix the bottom with the top soil, and burn roots and stumps, and use more or less fertilizers, principally guano. After a field has been plowed up they stake it off into lots or plats, giving each coolie as much ground as he is able to plant and cultivate with a hoe. The coolies are not hired by a period, but all by piece-work, so to say.

The coolies, after clearing the jungle and when the truck has become half dry cut it up so as to make it burn, clear the land. This hard and trying work is included in the price paid to them per thousand plants. I think the planters themselves look after the planting of the seed so as to have the largest number of plants possible for transplanting. To get good seed, the planters select the healthiest and most vigorous plants to let them bloom and go to seed, and open the seed-pods when the seed has a light brown or reddish color, and dry and clean it carefully. Seed left standing too long turns black and germinates unevenly. For seed beds rich loam lightly mixed with fine sand is selected; after hoeing and pulverizing it nicely a thick layer of

brush-wood is laid over it and burned. The ashes should be nicely raked in, not deep. The tobacco seed should then be mixed in with about ten times its volume of sifted wood ashes, and then be strewn carefully and evenly broadcast over the seed bed, and the latter covered with thorny branches to keep fowls and quadrupeds off. Sprinkle all gently at first and continue to do so daily if there is no rain. It is well to have a reserve seed bed, so that in case the seed sprouts too thickly in places to thin it out where strong enough to be transplanted with great care into the reserve bed. If this is well done, such sets will make strong transplanting sets, and insure good stalks.

In East Sumatra rain falls annually regularly, without fail, in April, and each planter, to have success, must have his fields prepared for transplanting sets by that time. The rain showers soon start the plants in warm, rich soil to a vigorous growth, so that in three or four weeks' time, when rain showers cease, the plant is strong enough to bear the sun. Before that, while the plants lately set out are still tender, the coolies give each plant sufficient shade against the sun's rays from the south and southwest, using bushy ferns and palm leaves for the purpose. For nursing young plants to vigor Chinese coolies, as a rule, are excellent. If any of the sets die, they are quickly supplanted from the seed bed. Each coolie gets as much ground as he is able to plant successfully, from 7,000 to 10,000 plants, the latter being rarely accomplished; and he knows that if he has poor plants at cutting time, and less than 8,000, he will likely have nothing due him, so he has to be careful and diligent. As shovel plows, sulky cultivators, etc., for cultivating tobacco in drills are not used in Sumatra, and the entire cultivation is done with the hoe, the tobacco sets are so set out between stumps and roots and on plowed fields as to give each plant (or tree as they call it there) ample hoeing room, and sufficient distance is given to prevent the lower large leaves overlapping and shading their neighbors. I think that 3½ by 3½ feet is a safe distance to cultivate with a hoe, and 3 by 4 feet when planted in drills and to be worked by cultivators—say 3 feet to 3 feet 3 inches apart in the drill and 4 feet between drills. When the tobacco is about 3 feet 6 inches high they break it off about hip-high and break out the suckers from time to time, allowing each stalk to have and mature about twenty leaves. Bottom leaves touching the ground are broken off. The atmosphere there, as here, is constantly charged with heavy moisture, and the dew-falls, as a rule, are heavy, and now and then they have rain showers; so that a crop in such prolific soil and tropical heat can mature in about seventy days. When the plants commence to exude a resinous fluid in globules it is taken as a sign that it is good and maturing; a few days later, if the weather remains fine and the leaves are losing their deep green color, changing to pea-green, the tobacco should be cut. It is very unfortunate if at this critical time heavy rains set in, since, if they last long, the tobacco begins to rot, or, if not very long but strong, the nerves of the leaves become coarse, the leaf thickens and loses elasticity, and is hard to both dry and cure.

When the crop is matured each coolie cuts what he planted, carries it to and delivers it at the drying-shed, where it is examined and classified into four or even five classes, the poor coolie having no voice in the planter's decision of classifying, viz, very good, good, fair, middling, and inferior; and he is allowed so much (a figure mentioned in the contract) per thousand trees of each class. When the tobacco-planting stock companies declare annually from 100 to 120 per cent. dividends, as, per statements in the papers never contradicted, they have done for years, one can not help but know how outrageously unjustly the poor "siukies" must have been dealt with. It is awful to think and ponder over it. Only a few weeks ago I read in two or three local and other Eastern papers that the Arendsburg Tobacco-planting Company in Deli had declared 120 per cent. dividend for last year. The planting rates used to range, only a few years ago, from about $4 for lowest to $10 for best per thousand trees (not dollars gold, but Mexican silver), and as a coolie rarely can plant over 9,000 trees (of one crop), and has to clear, burn, and hoe the ground, transplant and cultivate, cut and carry in the tobacco, and find himself, including expenses from the time he left China, one can count at his fingers' ends the handsome balance that will be due him from the planter.

I have referred the questions of present allowances for planting per thousand, assistance in drying, bundling before curing (the Chinese are not employed in curing), assorting and again bundling, packing, etc., to my consular agent at Penang, who is in business relations with several tobacco estates in East Sumatra, and has therefore much greater facilities for obtaining all the details there than I possibly could have and in a much shorter time, too.

The frames of the tobacco drying-sheds (also of coolie houses and curing-sheds) are built of long, straight, very hard wood poles. All the intersections or crossings are fastened together with rattan thongs. The roof and sides are covered or thatched from top to bottom with attap-palm leaves, which, when well, closely, and evenly laid on, form an excellent roof and wall covering. Small shutters are provided to give draft when wanted, or to be kept closed in wet or damp weather. All the work of building drying and curing sheds and coolies' quarters is done by Malays from the islands of Java or Boyan, who are great adepts in all such work. The tobacco plants, when brought from the field, are hung up and suspended from tough sticks laid across beams (*i. e.*, poles), pretty close together, with enough room either way to have enough of drying air. The beams, with sticks, are laid in stages a little over plant length from each other. Some planters pursue the more laborious but sure way for good, uniform drying of cutting the leaves from the stalk and stringing them on rattan thongs and suspending the latter from the cross-sticks. This gives the leaf the air from both sides alike, and causes the leaves to become dry nearly at one and the same time, as well as prevents attacks by fungus in times of protracted wet weather. The fungus is apt to appear on suspended stalks (leaves not cut off) underneath the leaves hanging limp close to the stalk. Great watchfulness is required right after tobacco hanging if the

weather is damp, and at the least appearance of fungus charcoal fires have to be built, evenly divided on the ground first, and next the plants have to be taken down, the leaves cut off and strung to rattan thongs and treated as above described. After the tobacco has become fairly and uniformly dry the leaves are bundled, about fifty, regardless of size, to a bundle. The bundles are then taken to the curing-shed, provided with a boarded floor, and stacked for fermentation.

I have, owing to the force of circumstances, never been in Sumatra, nor at any time in a tobacco curing-shed, and what I write here about tobacco curing, the most difficult part in the preparation of tobacco for market, I learned in conversations with several tobacco planters at different times, viz: After the tobacco comes bundled from the dry-shed to be stacked in the curing-shed for curing the base of the stack is formed, to be from 5 to 6 feet in diameter, and the stack is built as high as men can reach to lay the bundles, and so as to form a round cone. Here and there, as the stack is being built, commencing below half-high to above half-high, large bamboo tubes are laid from the center of the stack to the outside thereof. The tobacco soon commences to heat and sweat. The party charged with curing has now to watch closely that the tobacco does not become overheated. To ascertain the exact degree of heat in the center of the stack he inserts a thermometer into the said bamboo tubes, leaving it in a tube for a few minutes; extracting it smartly he ascertains the exact degree of heat, and when he finds the temperature is getting above the safety degree (what that degree is I don't know, but to the best of my recollection it is a few degrees above blood heat) he opens and shifts the stack by building a new one. In doing this he puts the outside bundles of the late stack in and around the center of the new one, and what was inside before on the outside. There it remains undisturbed till the tobacco has become fermented uniformly from top to bottom. When it has ceased to exude on the floor it is the sign that the tobacco has become cured. It does not often occur, if the treatment has been proper, that a stack has to be shifted a second time.

After the tobacco has become well cured the bundles are gradually taken to the assortment table and opened, and the leaves are then assorted, first as to lengths and next each length as to colors, of which there are several, from pale brown or yellow to dark or very dark. As quickly as they are assorted they are bundled for packing, each length and color by itself. Three to four lengths are observed to each color; of the largest leaves about fifteen to eighteen go to a bundle, next size about twenty to twenty-two, third size about twenty-five. Spotted or broken torn leaves are made an extra bundling and packing regardless of lengths. When assorted and bundled the tobacco is sent to the baling press, and each bale must contain one length and color, and is marked accordingly. Great care must be taken in baling to make the bales smooth and square. The bales must be well pressed, made solid, but not overpressed, else the tobacco will become streaked during transportation to Europe. The bales are covered with excellent, strong, closely woven mat-

ting made in Java, carefully bound and marked for shipment. The bales are made to weigh a trifle over 1 picul (1 picul = 133⅓ pounds avoirdupois) each, say about 140 pounds avoirdupois.

The baled tobacco is then sent to Lambuan Deli for shipment to the planter's agent at Penang (to Penang chiefly, being nearest; very little is sent to Singapore) for transshipment to the planter's selling agent at Amsterdam or Rotterdam.

As I have shown in my commercial report of 1887, the planter does not know the price or value of his crop when he ships it; he appraises it approximately for the purpose of raising marine insurance on the quantity shipped. His factor in Holland opens bales of each color and size for samples. The brokers are then asked to come at an appointed time, and after a close examination of each length and color (grade) and burning of leaves to see what kind of ashes, white or dark (the whiter the better), each broker makes a secret or sealed bid, giving his quotation for each and every grade to the factor (at these bids he is expected to buy, if they are taken), and after all of them have handed in their bids, the factor sells the quantity to that broker that had offered the best average price. The factor, after deducting all charges and his commission, remits or accounts to the planter for the balance due him. Then, and not until then, will the planter know what the average value of his crop per Dutch pound (1 Dutch pound = one-half kilogram) is worth. I give this information as I received it occasionally from planters and their agents here in casual conversations about Sumatra tobacco.

TOBACCO PLANTING IN BRITISH BORNEO.

The British North Borneo Company (*i. e.*, the firm of Dent, Overbeck & Co., which created the said company after having secured the lands), having acquired, about twelve years ago, an immense tract of country from the Sultan of Brumi, and necessarily spent a large amount of money in the creation and for the maintenance of a government and in the establishments of ports and the most needed public improvements, etc., was naturally anxious to earn revenues. It made liberal offers, at first through large concessions of lands, and later on through the sale on easy yet safe terms to actual settlers with capital coming well recommended, to plant, erect saw-mills, and carry on trade. At first there was scarcely any talk about tobacco, and rather about sugar, coffee, spice, etc., planting, while others had an eye to the export of the very valuable species of timber growing there, accessible by sea or rivers. The water-sheds, of which there are quite a number of large ones, and most of them are navigable for a certain distance, the Kinabetangan and the Kienanis, with important tributaries, being the largest, were explored for their various resources, as minerals, timber, gutta-percha, rattan, etc., including fertile tracts of lands, of which latter plenty were found. The land there contains no more volcanic soil than on the peninsula of Malacca (*i. e.*, none); but it was good, much of it alluvial, and in places excellent. The early settlers and explorers finding here and there very fine,

vigorous tobacco plants in the gardens of natives, and the Philippine Islands, with their famous tobacco, laying not far off, some of the pioneer planters (slowly, by degrees) concluded to try tobacco planting on a light scale to try the market (commencing only about five years ago, *i. e.*, here one did not hear of it before that time). At first they only sent small packages of leaves to experienced Deli planters and other good judges to get their opinion of it, and were informed in reply that it was as fine and elastic in texture and in every way as good as Deli tobacco.

The British North Borneo Company, through officials, agents, settlers, and travelers, and others interested in it, had published in widely-circulated papers from time to time reports, more or less glowing, on the vast resources of its territory and its great future; and now that reports of the excellence of tobacco grown there could safely be mixed in with or added to such reports general attention to that country was aroused, especially after an English planting company had sent a small shipment grown on their estate, which they had named "Ranow" (probably named after a place on the west coast of Sumatra famous for tobacco), situated near Marudu Bay, not to Holland, but to London for a trial market (the tobacco had been treated as they treat it in Sumatra), which was sold there at an excellent figure, above Deli average. This created great attention, and the reputation of North Borneo as a good tobacco-growing country became as good as assured. The influx of applicants for land on which to plant tobacco increased, gathering volume as time progressed, and consisted not only of British, but also of subjects of various European countries. No line was drawn by the Government of British North Borneo (and that was very sensible); all were equally welcome so they were solid—had means and came well recommended.

Several small shipments since the first Ranow sending above alluded to may have been sent to Holland in 1887, or early in 1888, without creating here much public attention,* but the first large shipment, taking the official North Borneo Herald for my authority, was sent last year to Amsterdam by the Ranow estate, viz, 280 bales, and sold at an average price of 1.26 Dutch guilder,† or more than 15 guilder cents in excess of the average price realized by the Sumatra tobacco crops. Other small shipments, grown in different localities of North Borneo, brought as much, or nearly as much, experts pronouncing them as good as Sumatra tobacco. Large stock companies with much capital have been formed in both Holland and England and elsewhere for tobacco planting there, securing very large tracts of land in different localities from the North Borneo Company on leases of nine hundred and ninety-nine years.

I inclose, for elucidation of the terms upon which lands can be leased, marked No. 1, the "Land Regulations of British North Borneo," with "Special regulations for the leasing of uncultivated lands in lots of 100 acres and upwards in extent, approved by the court of directors of the British North

* In Holland they did, as the sequel will show.

† 1 guilder or florin = 40.2 cents.

Borneo Company on the 7th of February, 1883," all faithfully copied from the official North Borneo Herald. These land regulations have, since this enactment, experienced some slight modifications, the most material among them being that the price per acre (see sections 4, 5, and 6 of the land regulations) was raised to $2 a year ago, and not long ago to $3, the present price.

I further inclose, marked No. 2, carefully copied from the British North Borneo Herald (official gazette) of the 1st of December, 1888, a list of the estates thus far secured or entered, giving the names of each owner (be it a company or one person), the number of acres purchased, the district in which his land was located, and the product he intends to grow thereon. It will be seen that most of the lands were taken for the production of tobacco, and that the number of estates, ranging between 2,000 and 69,000 acres, amounted to about fifty-eight. I think that among these some — the oldest — will send large consignments of tobacco to Holland this year.

What surprised me was that among the applicants for land (now owners), with Dutch possessions on the west and south side of Borneo, and near it, in the shape of a very large number of luxuriant islands, large and small, awaiting enterprise and development, known as Netherlands India, were so many Hollanders (a preponderance among all the owners in the inclosed list). Among them are men of high-sounding titles, counts, barons, etc., and it is known that others left their estates in Sumatra. The secret of this, I think, is to be found in the fact that they can obtain lands in North Borneo on easier and more satisfactory terms, and have much less taxes or sundry dues to pay than in Netherlands India. Quite a number of Germans went there, *i. e.*, North Borneo, as well, and have large estates.

The climate of North Borneo in the main is said to be more salubrious than in Sumatra; in other respects about the same — moist and warm the year round. The system of clearing, planting, drying, curing, and preparing tobacco for market is about the same as in Sumatra, as well as that of building coolie quarters, drying and curing sheds. The coolies are engaged through the Chinese protectorate in Hong-Kong, and shipped to either the port of Sanda-Kau or Kudat direct, where the planter receives and transships them to his estate. Formerly they were sent to Singapore and engaged here in the manner above described, but that roundabout way, so much more expensive and time absorbing, was soon abandoned. But for shipping tobacco from North Borneo to Europe Singapore is the port of transshipment, and, in fact, Singapore is the base of supplies and market for nearly all products from Borneo, tobacco excepted. Only that portion of Dutch Borneo which faces the Strait of Macassar may send some of its products through the factories of the Netherlands Trading Society to Macassar, Sourabaya, or Batavia.

What the exact quantity of either East Sumatra or Borneo tobacco exported to Europe, by way of transshipment at Penang of the former and at Singapore of the latter, in 1887 or 1888, is, can not be correctly ascertained, because the port statistics for said ports in that respect, I feel certain, are not

at all reliable. This information can only be obtained from the ports of Amsterdam and Rotterdam, whither, to the best of my belief, the tobacco is sent, unless a small portion of it is sent to London.

A. G. STUDER,
Consul.

UNITED STATES CONSULATE,
Singapore, March 20, 1889.

[Inclusure 1 in Consul Studer's report.]

LAND REGULATIONS OF BRITISH NORTH BORNEO.

Special regulations for the leasing of uncultivated lands in lots of 100 acres and upwards in extent.

(Approved by the court of directors of the British North Borneo Company on the 7th day of February, 1883.)

(1) Applications for uncultivated lands of 100 acres and upwards in extent should be made to the company, the governor of British North Borneo, or the residents of districts.

(2) Should the application be accepted the land must be selected within twelve months from the date of such application, but no selection shall be valid unless approved under the hand of the governor, who shall have power to disallow any such selection either in whole or in part.

(3) The governor will grant an agreement for lease of the land so approved by him to the applicant, to be followed as soon as possible by the issue of a lease for nine hundred and ninety-nine years.

(4) Should the immediate survey of such land be impracticable from any cause the governor will issue a permit to occupy such land, subject to the conditions on which a regular grant would have been issued, which permit will specify the extent and describe as nearly as may be the situation of the land to which it relates, and after the survey of the land so occupied the permit will be called in and cancelled, and a regular lease issued in lieu thereof.

The price of land is now $3 an acre.

(5) Upon the payment of $1 per acre a lease may be granted free of quitrent.

(6) A lease may be granted upon the payment of a premium of 50 cents per acre and an annual quitrent of 10 cents, redeemable at any time before the expiration of the lease on payment of $1 per acre in addition to the premium.

(7) One-third of the premium must be paid on the completion by the governor of the agreement for the lease and the remainder within twelve months from the date of the first application for the lease, or on the granting of the permit, or of the lease, whichever shall first take place.

(8) A bona fide commencement to bring the land under cultivation must be made within eighteen months from the date of the selection of the land, and the lessee will be entitled to retain 2 acres of uncultivated land for every acre that shall have been brought under cultivation within a term of twelve years from the date of the agreement for a lease.

Should there still remain a balance of uncultivated land to make up the total acreage named in the original agreement, after the deduction of the cultivated and uncultivated land to which the lessee is entitled at the end of the said twelve years, that balance of uncultivated land will revert and escheat to the company.

(9) All coal, minerals, precious stones, and mineral oils on, under, and within the said lands are absolutely reserved to the company, or its licensees, together with the right to enter upon the said lands, and to search for, get, and take away coal, minerals, precious stones, and mineral oils in, on, or under the same, and to reserve such portions of land as may be necessary for examining or working any mines, or conveying away the products thereof, upon payment of reasonable compensation to the lessees for surface damage to such land.

(10) Mining licenses will be granted on favorable terms to the lessees of demised lands.

(11) The company reserves all navigable streams, rivers, and creeks, and a belt of land 50 yards wide along the banks of the same, and also a similar belt of land from high-water mark along the sea-shore; ample provision, free of rent, being made for landing-places and other purposes, for the convenience of the neighboring estates.

The company will also reserve such portions as may seem advisable along the ridges of hills.

(12) The company reserves the right to resume possession of such portions of land as may be necessary for public purposes, such as police, revenue, and telegraph stations, roads, railways, canals, etc., upon payment of compensation for damages actually sustained by the lessee.

(13) The company reserves the right at all times to take, or to authorize others to take, timber, stone, clay, sand, and other road-making material for the construction and repair of neighboring roads, bridges, etc., on payment of reasonable compensation for actual damage done to the crops or roads of the lessee.

(14) The company reserves all edible birds' nests and guano, and also the right at all times to enter on the demised land, and to take or authorize others to take such edible birds' nests and guano on payment of reasonable compensation for actual damage done to crops or roads of the lessee.

The lessee will be entitled to collect all gums, gutta-percha, India rubber, and other natural produce (save edible birds' nests and guano) on and of the demised land, paying any such royalties in respect of the export of such produce as may for the time being be reserved to the company, in pursuance of any regulations made or to be made by the company. Provided, that if the lessee at any time, and from time to time, has not exercised his right in respect of any description of such produce, the company may serve on him a notice of its intention to collect such description of produce, and if within a period of six months from the service of such notice the lessee has not exercised his right, the company, or its licensees, agents, or servants, may, at any time within three months from the expiration of such period of six months, enter on any forests or uncleared or uncultivated tracts of the demised land and collect therefrom the produce referred to in the notice for the use or benefit of the company, on payment of reasonable compensation for actual damage done to the crops or roads of the lessee, and so from time to time.

(15) All expenses of survey, demarkation of boundaries, transfer or registration fees, and expenses of conveyance shall be borne by the lessee. Land marks shall be set up and be kept in repair at the expense of the lessees.

(16) Upon breach by the lessee of the regulations and conditions marked respectively 7 and 8 or either of them, the land shall revert or escheat to the company.

(17) All arrears of payment due by the lessee under the provisions of this notification shall be recoverable by summary process in any court of law in the territory of the British North Borneo Company.

(18) In the case of companies or persons wishing to take large tracts of land modifications of clauses 5, 6, and 7 may be made.

(19) The regulations respecting the registration of titles to land and fees chargeable for registration shall be the same as those enforced by ordinance No. 7 of 1849, enacted by the legislative council of the British colony of Labuan, which ordinance has been adopted as the law in this matter throughout the territory.

(20) The only fee chargeable under the provisions of this notification upon the issue of a lease is the sum of $2, which includes the fee for the registration of the same.

(Signed), WILLIAM HOOD FREACHER,
Governor.

[Inclosure 2 in Consul Studer's report.]

*Estates of British North Borneo.**

[From the British North Borneo Herald (official gazette), December 1, 1888.]

Owner.	Acres.	District.	Product.
Alcock Province.			
Rotterdam-Borneo Company	3,000	Banguey	Tobacco.
German-Borneo Company	11,969	do	Do.
Do	11,170	Benkoka River	Do:
P. Christian	300	Kudat	Liberian coffee.
Marudu Bay Company	4,000	Marudu Bay	Tobacco.
Rotterdam-Borneo Company	4,000	do	Do.
Borneo Tobacco Company	4,844	do	Do.
The London-Borneo Tobacco Company	26,000	do	Do.
Rotterdam-Borneo Company	10,000	Benkoka River	Do.
Total	75,283		
Dewhurst Province.			
Borneo Tobacco Company	50,000	Sugut River	Do.
A. Doorn, B. T. M. Samarang	3,000	do	Do.
Do	4,000	do	Do.
A. van Citters	4,000	do	Do.
Do.	4,000	do	Application.
H. Beming	4,000	do	Tobacco.
Heilgers	10,000	do	Do.
Total	79,000		
Martin Province.			
C J. G. van der Hoeven	30,000	Labuk River	Do.
E. E. Everett	10,000	do	Do.
Jan C. Teves	5,000	do	Do.
J. Houthuysen	5,000	do	Do.
J. D. Cramerus	5,000	do	Do.
A. Tousent Keyser	5,000	do	Do.
Baron Taets von Amerongen	10,000	Lokan River	Do.
Coruets de Groot	5,000	do	Do.
Do	5,000	do	Do.
W. van Gogh	5,000	Labuk River	Do.
Aug. Kock	5,000	do	Do.
Total	90,000		
Myburgh Province.			
Various	69,000	S'kan Bay	Various.
North Borneo Tobacco Company	4,000	Segalind River	Tobacco.
British Borneo T. and P. Company	60,000	S'kan Bay	Various.
W. E. Hooper	10,000	do	Tobacco.
A. van Son	5,000	do	Do.
Various	15,000	do	Timber leases.
E. G. R. Mosson	4,000	Kinabatangan	Sugar.
Moud & Thooft	5,000	do	Tobacco.
T. A. Warnecke	5,000	do	Do.
J. H. Schmied	5,000	do	Do.
Erdmann & Sieleken	5,000	do	Do.
A. F. B. van Delden	5,000	do	Do.
G. F. W. Kehrer	5,000	do	Do.
H. N. I. Lugt	5,000	do	Do.
Junius van Hemert	3,000	do	Do.
Do	5,000	do	Do.
Do	5,000	do	Do.
Coruets de Groot	5,000	do	Do.
H. D. Suabilie	5,000	do	Do.
Darvel Bay Company	16,000	Segama River	Application.

* Fifty-eight estates in all.

Estates of British North Borneo.—Continued.

Owner.	Acres.	District.	Product.
Myburgh Province—Continued.			
H. E. Dorrspaal	5,000	Kinabatangan	Tobacco.
W. G. Brodie	10,000	do	Various.
E. E. Abrahamson	5,000	do	Tobacco.
East Borneo Planting Company	5,000	do	Do.
Total	268,000		
Mayne Province.			
Baron A. von Stein	20,000	Darvel Bay	Do.
Darvel Bay Company	2,000	do	Do.
Do	2,000	do	Do.
J. Spaujaard	2,000	do	Do.
W. A. Vos	6,000	Segama River	Do.
P. H. Tromp	5,000	do	Do.
Total	37,000		

NORTH BORNEO.

[Report of a trip to British Borneo, by Mr. W. S. van Delden, of Djocdja, Java; translated by Mr. F. W. Cordes, of same place, and transmitted by the acting consular agent at Samarang, Mr. P. N. Tiedman.]

To reach the delta of the Kinabatangan River requires a journey of 15 statute miles (1 mile = 1,760 yards or 1,609.3 meters) from Sandakan, going east to east-southeast, where the mouth of the Mumiang may be reached. This Mumiang is the most northern of the many mouths of the Kinabatangan. There is a bar, which, however, is easily crossed during the flood and with boats of 6 feet draught. Three miles up the river the Mumiang becomes one-half mile wide. The shores are overgrown with mangroves, and are low and swampy, the same being the case with most rivers in this archipelago. Higher up the river the mangroves become scarce and nipa take their place, and afterwards in the region where the water becomes sweet a dense forest begins. As the shores during the first 15 miles are rather low it seems to me very probable that with spring-tide and high waters the adjacent grounds must be inundated.

Steaming higher up the river the banks gradually become higher and higher, and just before reaching the Kampong (village) Malapi, some steep hills are seen, which rise suddenly from the banks of the river without having previously attracted notice because of the preceding uneven grounds.

It is my opinion that these sandy hills existed and stood in the open sea long before the Kinabatangan commenced bringing down in its course sand and mud, which later on formed this lower part of the country around the said elevations. Before reaching Malapi no cultivation is perceivable, and sometimes a ladang (formerly cultivated fields) may be seen.

Malapi lies, say, 30 miles from the mouth, and has a population of about 125 souls under a panglima, who, being a native chief, serves the British North Borneo Government, which pays his salary. The inhabitants are descendants of Sooloos, who have expelled the original inhabitants, who were called "Booloodoopees." The former are traders in products of the forest, and during the season gather swallows' nests in the Gomanton caves.

They are not a farming people, and what they grow around their dwellings is planted and looked after by the women. In former times the slaves did the planting. When I asked the people whether they were prepared to make "ataps" (roofings made of nipa) at the time when the plantation on the Kinabatangan would be opened, they answered that they would, and even with pleasure.

The soil of alluvial formation is a grayish-brown and very heavy loam, and in some places beds of sand are found. The "ladangs" around the dwellings are poorly cultivated, but the maize, sugar-cane, tapioca, sargo, obi, etc., which I saw looked thriving, but would have pre-

sented a splendid appearance if the soil had been worked a little better. The cocoa-nut trees which I saw were only four years' old, a token that the cultivation of this useful palm is only of recent date.

Further up the river the banks are better visible, as one sails for miles past deserted ladangs nearly covered with young trees. The banks are mostly yellow, sandy cliffs and red stone; gravel I did not notice. Half-way between Malapi and Bilit, on the left shore, some hills are seen, which are entirely covered with dense forest. The soil of these hills consists of a very porous and small-grained sandstone, which easily disintegrates. Clear and good water flows from the foot of said hills.

Kampong Bilit is situated about 45 miles from the mouth of the river from where the ladangs stretch along the shore for some miles. Bilit has light, yellow, sandy grounds, which have been washed from the hills on the north side. Under this sand there is the grayish loam from the river alluvial deposits. The inhabitants of Bilit are also Sooloos by descent, and trade in or gather swallows' nests. Their panglima dait lives in a big kampong, the population, numbering in all about 150, living on or near the same. As at Malapi, the women cultivate the ground, planting "paddy," "obi," "sargo," sugar-cane, and tapioca. The paddy crop is not sufficient for their wants, and an additional quantity is supplied from Sandakan.

Going from the head kampong the settlements extend for some miles along the river on both banks, thereafter meeting with deserted and overgrown ladangs. Judging from the appearance of the tops of the trees on the north side, ranging higher or lower according to their position, I believe that they grow on uneven ground. The southern bank is quite flat, with the exception of one hill of about 200 feet, situated about 17 miles beyond Bilit. Eleven miles further on the Batoe Poetic is reached — a white cliff in the middle of the river. Up to this point steam-launches with 5 to 6 feet draught can navigate, higher up a draught of only 3 feet will find admittance.

The color of the soil somewhat lower down than Batoe Poetic is gray, being alluvium from the rivers higher up the country, which formed this portion of Borneo. If North Borneo had volcanoes one would say, from the color, that it consisted of volcanic ashes, so grey and small-grained is it. These grounds must be an alluvium from light-gray soils, which were brought hither by heavy rains and by the river, and, being mixed up with particles from plants, they have got the brownish tinge. Digging up this soil, a few days of exposure to the sun will make it dissolve into mold. The lower ground holds enough dampness to nourish the plants so that they can stand the dryness, and yet it is porous enough to let the superfluous water trickle through. I came to the conclusion that, notwithstanding the daily rains in these spots, no signs of standing water remain. On many places I found a thinner or thicker layer of sandy ground. This sandy ground is probably a washing away of the sandstone hills mixed up with humus (virgin soil). In all places the lower ground is covered by a humus layer, measuring between 3 and 6 centimeters. The gray ground, as respects its compactness, must be classified as sandy loam, while the sandy ground must be ranged among the light soils. Both these soils are exceedingly fertile, but on those places where the layers of both soils are not too thick as to permit the mixing of one with the other a tilling ground is obtained which will produce the choicest leaf tobacco.

The hills consist of sandstone. It is of a yellowish-grey tint, soft and porous, of a very fine grain, so that by rubbing a small piece between the fingers it is easily crushed into dust. Through the porosity of the stone and the vigorous growth of the plants on the hills, the rain-water penetrates readily to the roots of the plants, and at the foot of the hills this water reappears as clear, pure spring-water.

The four concessions of Mr. Teves — 5,000 acres each — as proxy for various parties, were taken on the right bank of the Kinabatangan, each for two miles hemispherical width, one siding the other, and are now booked under the name of British North Borneo Agricultural Company (limited), F. W. Cordes and Jan C. Teves being the owners. The soil is the same as that near Batoe Poetic — partly brownish-gray loam, partly sandy ground with loam sublayers.

All the concessions are flat land. The banks, notwithstanding the abundance of the water, were 8 to 10 feet above the level of the river. From the river to, say, 100 meters inward the soil rises quite gradually, and then begins to become flat or slightly uneven.

Some miles inland, towards the south, the ground slopes down a little, so that this ground lies below the level of the banks of the river. The rivulets which from these regions flow into the Kinabatangan are to be considered rather as natural drains of the land behind. During the time of high water, in the rainy monsoon, it happens that the rain-water from the land behind can not be got rid of, and this can only take place when the water has fallen in the Kinabatangan.

In Lower Langkat, near Deli, Sumatra, there are many of these lowlands, where these drawbacks are met by erecting dikes and sluices; so that this low site may be an inconvenience, but by no means an impediment, to the cultivation of the soil. As to the submersion of the banks by the river, this may happen, but very rarely, and then in the height of the rainy season, say in December and January, at which period no tobacco is on the fields.

Below Bilit the soil is throughout gray loam, and still it seemed to me that the surface is more compact, and it is for that reason that I chose the territories above Bilit. As indicated on the map, northwestward of Bilit lie the Gomanton caves, where edible swallows' nests are gathered. These caves and five miles of surrounding territory are reserved by the British North Borneo Government for their own benefit. They are not allowed to be given in lease to anybody, as the Government fears that the swallows might be disturbed and driven away, and thus an end might be put to a sure source of income for the Government and population. The estates situated near the reserved grounds have almost the certainty that, through the continuation of the vicinity of the forests, the climatic conditions remain the same.

It may be taken for granted that the rain-fall will be as nearly as possible the same as that on the south coast of Sandakan Bay. Everybody who has lived at Sandakan for several years states that during the dry season rain falls more frequently and at regular intervals in the districts southward of Sandakan Bay than in Sandakan itself. It often occurs that in these southern districts rain is observed three or four days before it falls in Sandakan, the cause of this being, probably, that, the winds in these months coming from southwest, the fall of the rains from the interior of Borneo proceed in a northeasterly direction towards the coast.

During the whole time I spent on the Kinabatangan the water was high, on account of the rainy weather in the higher districts. Where I was the sky was clouded during the day. On several days we had a mild shower of rain between 5 and 6 o'clock in the afternoon. The atmosphere in the forests was oppressive, because rain had fallen on the evening before. Ditches of water that could not penetrate into the ground I did not find, though I kept a sharp lookout for them. The inhabitants of Malapi and Bilit drink the water of the river, which has a yellowish color, without suffering from indigestion. The oarsmen of our boat daily took quantities of this water, on account of the great heat, without feeling uncomfortable. I myself tried the water, and liked the taste very much.

There is a dense forest on both sides. For miles and miles there are enormous trees; not a bare spot ascribable to lack of fertility is to be seen. The access into these forests is rendered difficult by various kinds of hanging plants, among which, in the first place, rattans must be mentioned.

The natives pointed out to me different kinds of excellent timber woods, such as "raspak," "bilian," "poeling papan," "madang batae," etc. It is characteristic that on the deserted ladangs no ladang grows. There was either young forest or, on the open places, there grew rich and nutritive grass 3 or 4 feet high. Traces of wild cattle I often noticed, which show that these animals had chosen their pasture grounds in these places. Where the banks gradually rise there grows a kind of rush, called "baronio" by the natives; in Java we call it "liengie." This plant is found only on exceedingly rich alluvial soil.

About 70 miles further up than Batoe Poetic a numerous population lives on the banks of the Kinabatangan. These people gather products of the forest, which they exchange with traveling merchants for articles of import or money. Every day I saw "lantiens" (rafts of bam-

boo and light timbers), whereupon a hut was built out of "kadjang" mats, serving as a shelter for the forest products drifting down the river.

As mentioned above, on the banks and the interior of the country, with the exception of Malapi and Bilit, the lands are not inhabited, but the visible remnants of deserted ladangs along the banks show that in former times the whole territory was thickly peopled. Pillaging by the Sooloos and small-pox epidemics have depopulated these districts.

It is probable that the inhabitants of Malapi and Bilit will readily make contracts to fell trees in their leisure time, as this kind of work for their ladangs is also done by the male population, and so it is possible that they will consent to build small dwellings.

On the west coast, by not asking too many at a time, wood-cutters may be engaged at wages of $8 a month. These people are also able to construct huts, as has been shown at the Ladang Datoo estate.

As it is a certainty that coolies, with their wives and children, can be imported from Hong-Kong, it can be taken for granted that cultivating tobacco estates on the Kinabatangan can be done at less expense than on the east coast of Sumatra.

W. S. VAN DELDEN.

DJOCDJA, *August, 1888.*

DUTCH INDIA.

SUMATRA.

REPORT BY VICE-CONSUL WOOD, OF BATAVIA, JAVA.

The extent of land devoted to the cultivation of tobacco in Sumatra during 1888 was about 720,000 acres. It is unlikely, however, that this area under cultivation will be hereafter increased or even employed, since it is now difficult to find suitable soil. It is, in fact, the opinion of one who has, for some time past, been interested in this industry that, after fifteen years of exceptional prosperity, the cultivation of tobacco reached its highest point in Sumatra two years ago, and that, for the future, a similar gradual decrease is to be anticipated, both in the quantity and in the quality of the product, as has been experienced with the Java leaf, which, with the exception of that from the Bezouki district and from several spots in the native principalities, is now quite unfit for the European market, and is not to be improved. In fact, it should be stated in this connection that the Siak plantations (Sumatra) have already failed, and the dissolving of the company is proposed, since it is shown that the territory owned by it is now unfit for this culture.

Among other drawbacks, likewise conducive to this result, is the absence of efficient labor, which still continues to be a source of much vexation and loss to Sumatra planters, owing both to the insubordination of the coolies, due to the influence of the Chinese labor organizations and secret societies, whose members are bound by oath to help each other under all circumstances, and also to the exactions of brokers, who combine to restrict the supply of workmen in order to raise their own commissions. Recently, however, the planters were successful in combining to import coolies direct from China, notwithstanding the high steamer rates for charters, and in thus avoiding the $200 rate per coolie charged by brokers. It is expected that relief in this

particular will shortly be afforded through direct immigation from southern China as soon as Deli becomes better known there, and thus lighten the present conditions of engaging laborers. Over three hundred coolies were recently sent home at the expiration of their contracts, with their earnings of $25,000, which will unquestionably conduce to call the Chinese to this quarter, while numbers are constantly arriving from the Straits Settlements with evident intentions to settle in Sumatra, which fact can not fail to have a beneficial effect in the labor market.

For some time past, Sumatra tobacco has been losing ground in Holland markets, with the result that grades formerly worth their weight in gold are now sold at ordinary rates. The total production for the island in 1887 and 1888 was 144,000 bales, of which amount 5,000 were sold at Bremen and 124,000 of the 139,000 remaining were disposed of at Amsterdam, the crop bringing in all about 26,000,000 florins. Though the export of 1888 exceeded that of the previous year by 5,000 bales, the average price remained 34 Dutch cents* below that of the crop of 1887. The prices for well-known brands ran from 92 to 162 Dutch cents, against 142 and 220 Dutch cents at the sales of the latter year. As regards the crop of 1888 and 1889, little can as yet be said, since sales on forward delivery before the produce has arrived in the home market have never occurred. The product is shipped during the months from February to May, so that the bulk is sold in Holland during the latter half of the year.

Advices up to the present as regards the quality of the crop are satisfactory, but final judgment can be given only when the tobacco is exposed in the home market. Leaf for cigar-wrappers is always more or less of a fancy article, especially as regards the color. For a long time dark shades were preferred, but in 1888 the chief inquiry was restricted to light grades, even by American buyers, and to this fact, as well as to a copious rain-fall during the growth of the plant, must be ascribed the lower prices ruling at the last sale. Planters have, of course, endeavored to ripen the present crop in light colors, but their success in this regard is as yet unknown. A Sumatra planter thus writes in this connection:

I will add a word about the colonial situation at Deli as to the tobacco crop for 1888. The sale of the last of the 1887 lot went at deplorable rates in November and December last. For example, one of our plantations, whose product for 1886 sold for 1.56 florins a pound, disposed of the leaves from the following harvest for 0.50 florin, or at one-third of the former price. As for others, there exists the same disproportion. These rates are evidently ruinous, and it is to be hoped that the 1888 crop, which is now being put on the market, will fetch better prices, though it is doubtful, since it is estimated at about 180,000 bales of 80 kilograms each, a quantity exceeding that of 1887 by 30,000 bales. This will ruin some undertakings, and, by decreasing their number, will probably raise prices next year.

The tobacco is now shipped to Amsterdam, Rotterdam, and Bremen. A sale has taken place at the last mentioned city during the past two or three years only. A small quantity is sold, too, at London, where it is expected sales will be larger in coming years, in view of the number of American purchasers. The Germans have deviated the market to Bremen, since

*1 cent American = 2½ cents Dutch.

they are represented in large numbers among the planters and, moreover, buy about two-thirds of the crop. Americans are also large buyers, while the French content themselves with purchases at second hand of the finest sorts, and have always refused to make bargains with the producers direct.

The great feature in this industry during last year was the great impetus given to tobacco planting by the rush of pioneers, prospectors, planters, and capitalists to the fertile forest lands lying about the northern bays and eastern coasts of British North Borneo, while a concession has also been lately given for a large tract of jungle in West Dutch Borneo, which is also deemed suitable in climate and soil for this culture. All available land about Maruda Bay and two large areas on the banks of the Sugut, Labuk, Kinabatangan, and Segama rivers, and Lahad Dato, in Darel Bay, has already been granted by the Government to different companies, and an area of about 450,000 acres will be almost entirely devoted to tobacco cultivation, with the exception of the Liberia coffee estate of Mr. Christian, at Kudat, while considerable revenue will undoubtedly be derived from the sale of timber, sago, fiber, and sugar.

The industry is at present largely in the hands of Dutch planters, who have been attracted by the excellence of the climate and fertility of the soil and by the facilities afforded for acquiring land. There are now about forty contractors, who are, with few exceptions, Dutchmen and backed by capital from Holland, though several companies were also formed with English capital, and some even with a combination of both. At present two plantations only are in working order, while the others will require attention for five years before the area now ceded can be brought under cultivation. Embarrassment is experienced in employing able administrators and coolies. The latter are engaged, as in Sumatra, for cultivating the plant upon their own account.

The authorities have consequently subsidized the line of Holt Company's steamers to run from China to the Maruda Bay plantations to aid coolie transportation, which greatly facilitates the employment of labor. It is estimated, therefore, that the cost of running the Borneo plantations will be 25 per cent. less than that incurred in Sumatra. Moreover, the rivers are navigable for steam-launches and thus road making is obviated, which is always a costly item of expense in the tropics. The plantations already opened report that there is a freedom from sickness among the coolies which is usually attendant upon the opening of forests. By planting 500 acres only at Sandakan River a profit of 25 per cent. is guarantied, while prospects in other localities are equally as bright.

The first small shipment of 45,000 kilograms, sent in 1888, gave satisfaction, with the exception of some technical faults in the preparation, the price obtained being on an average 126 guilder cents. Splendid specimens of leaf have been obtained from the Banguey estate, Ranow, at Darel Bay. The leaf is of good size, in certain places very fine, in others satisfactory, and in no respect objectionable. Cigar manufacturers and brokers have reported that the leaf is superior to the Sumatra product for the purposes of the former,

because, like the latter, it is oily, smooth and silky in appearance, and neutral in aroma, which feature recommends it for cigar wrappers, as in the case of the Deli produce. One pound of Sumatra leaves covers 500 cigars, of Borneo 460, and of Manila 250.

Particulars regarding the soil, climate, and surroundings of these North Borneo plantations may be obtained from the account of the inspection given by Mr. Van Delden to the grant of the Borneo Tabak Maatschappij, which was formed in September last at Samarang, Java, with a capital of 300,000 florins, under a contract.

HORATIO G. WOOD,
Vice-Consul.

UNITED STATES CONSULATE,
Batavia, May 11, 1889.

EAST COAST OF SUMATRA.

REPORT BY CONSULAR AGENT LEDERER, OF PENANG.

PLANTING.

There are two ways of planting tobacco practiced in Sumatra. First, to plant on the virgin soil, after having cut down and burnt on the spot all the wood and jungle and properly drained and hoed the land intended for cultivation. Second, to plant on soil which has already been cultivated once before, with the help of manure specially selected for tobacco cultivation. The following is considered well suited for the soil in Sumatra: Dissolved Peruvian guano, Ohlendorff's Peruvian guano, Salomonson's Peruvian guano, which are applied to the soil in quantities of about three bags of 136 pounds each per field of 54,000 square feet. The cost of this manure, about $5 (Mexican) per bag, affects the actual cost of the tobacco very little, and the difference is amply made up by the smaller expenses in clearing the ground already cultivated before.

After the rough preparation of the soil the young tobacco plants, which have been grown in nurseries from seeds, are planted in the open field. The laborers employed are all Chinese coolies, and each coolie receives a field for planting, the working of which he has to look after solely. The coolies all live on the estate, in light wooden sheds, in gangs of eight to ten men. Each gang has its overseer, also of Chinese origin, and about five to ten gangs are superintended by an European assistant, or the manager himself if the estate is small. A middle-sized estate cultivates about three hundred and fifty to four hundred fields per year, employs about an equal number of field coolies, besides about fifty to one hundred Javanese, Boyans, and Malays, who are used for building sheds, sorting tobacco, etc.

The size of a field is about 1,500 square deppahs, or about 54,000 square feet. On this field the coolie has to plant from ten to twelve thousand young, healthy plants, which number has to be kept up by replacing sick or dead

ones. The field and the plants have to be kept free from all weeds and dangerous insects, and the soil is heaped thoroughly around each plant. The planting season begins early in March, and in August or September the plants are sufficiently developed for cutting. During the growth great care has to be taken that the plant is not allowed to bud or flower, as only thus large and abundant leaves can be produced to serve for wrappers. When the plant is permitted to flower all the strength goes into the latter, and the stalks and the leaves remain small and scant in number. When fully developed the plants, which reach a height of about 3 to 4½ feet, are cut off about 2 to 3 inches above the ground, and are transported to the drying-sheds in open baskets by the coolie himself. Strong plants, *i. e.*, those where the root and trunk are still sufficiently strong, spring up again after having been cut, and it occurs often that these suckers grow better than the plants. All good suckers, by the planters called "toonahs," are selected and treated like the rest.

DRYING.

In the drying-shed the plants are hung up one by one by the coolies. The field coolies are paid by the quantity and quality they deliver to the shed. By quality is understood the size and general appearance of the leaves. The leaf is generally ranged under four categories: First length of leaf, 15 inches or more; second length of leaf, 12 to 15 inches; third length of leaf, 9 to 12 inches; fourth length of leaf, less than 9 inches. For 1,000 plants of first length the coolie gets paid $8 (Mexican*), for the other inferior lengths less in proportion. A good coolie produces about 15,000 good plants in his field, for which he gets paid extra at the rate of 20 to 30 cents (Mexican) per diem.

In order to prevent the hung-up plants from getting rotten or mildewed during the process of drying constant small smoke fires are kept burning in the shed. After a few weeks, when the plants are quite dry, they are taken down and all the leaves cut off the stalks. The stalks are used as manure in the fields. The leaves are sorted by the coolies on five categories, viz, first, second, third, and fourth lengths, and one for broken leaf. They are tied in bundles of about sixty leaves each. For this work they are paid $4 (Mexican) per 1,000 bundles. A good working coolie can pick and sort as much as 2,000 bundles per month, and the sorting takes about three months.

CURING.

After this the bundles are brought to the curing-shed, where they are weighed and put up in staples for fermentation. Through the constant change of place in these staples, which are taken down and rebuilt whenever a certain degree of heat is developed inside, which is ascertained by thermometers, and the gradually rising temperature to which the leaves are exposed by their own heat during fermentation, the color gets more and more uniform, and the leaves become soft and elastic, and the particular smell of tobacco begins to prevail. The temperature to which the tobacco is successively exposed is

* 1 Mexican dollar = 87.5 cents American.

from 34° to 60° Celsius. For the work in the curing-shed, which is always under the direct supervision of the manager and some European assistants, Chinese and Javanese coolies are employed, and they get paid by the day 20 cents (Mexican) per man. Some estates also employ for this work Javanese women, who work cheaper, although the work is not equally good as that performed by the men. The women receive 10 cents per working day. According to the dimension of the estate from 20 to 100 people are continually employed in the curing for about ten months, viz, from August to May, when the last part of the previous year's crop is generally being shipped. After the leaves are well cured the bundles are opened and again sorted according to the colors and shades of the leaves. There are about twenty shades and kinds into which the tobacco is sorted, from the light golden-brown to the deep dark-brown.

PACKING.

The sorting work being finished, the leaves are bundled again and packed in bales of 80 kilograms (1 kilogram = 2.205 pounds). For packing fine reed mattings are used, and the bales are pressed into uniform shape by means of a tobacco-press. The size of the mats is 28 by 42 inches, and four mats are used for wrapping up one bale. The cost of these mats, which are native-made, is about from $40 to $50 (Mexican) per thousand.

SHIPPING.

As soon as a good number of bales are ready they are brought by bullock carts to the nearest sea-port, railway, or river station, whence they are forwarded to either Singapore or Penang for transshipment to Europe. The cost of transport from the estate to the nearest sea-port varies a good deal, generally from 20 to 75 cents are paid per bale. Freight and transshipping charges to Penang or Singapore come also up to about 50 cents per bale.

The average cost of a whole crop laid down in one of the above-mentioned European sea-ports varies greatly, and depends mostly on the result of the crop, regarding the average quantity gained per field. In second line comes the geographical situation of the estate, if near or far from the sea or a connecting railway station. A third important item is the manner in which the estate is worked, and fourthly the financial position of the owner. A well-situated company, with an average yield of about 5 to 7 piculs per field (1 picul = 125 pounds), may be able to produce their average crop at about from 65 to 85 Dutch cents (2½ Dutch cents = 1 American cent) per pound; but there are a good many whose crop costs from 30 to 40 per cent. more. The crop of Sumatra tobacco is shipped to Amsterdam, Rotterdam, and Bremen, but mostly to the former place, and sold there at auction to the highest bidder.

FREDERICK LEDERER,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Penang, March 30, 1889.

PHILIPPINE ISLANDS.

REPORT BY CONSUL WEBB, OF MANILA.

TOBACCO MONOPOLY.

When the Spanish Government gave up its monopoly of the tobacco trade in the Philippine Islands, in 1882, the culture of that staple seemed to acquire a new lease of life, and, through the efforts of citizens of almost every nationality who have invested capital in the business there has been a marked increase in its production during the last six years. Another stimulating cause has been an increase in the price paid the natives for its cultivation and a more just and liberal system of dealing with them than prevailed under the old régime. For a number of years the natives were subjected to what was felt to be an excessively rigid system of supervision and taxation that created a general feeling of dissatisfaction. It is quite probable, too, that this feeling was not permitted to weaken for want of encouragement from those who saw the possibilities for tobacco culture in this archipelago and were willing to participate in its benefits. The Government required each unmarried native who cultivated it to set out four thousand plants each year, and each married man eight thousand. After his crop had been cut and packed in accordance with Government requirements the native was obliged to deliver it at the Government warehouses in Manila and accept the standard price fixed by the Government for it, which was just 50 per cent. less than the standard price now paid. For some years the natives received cash for their tobacco, but subsequently scrip was issued, redeemable at the option of the Government. At first this scrip was paid quite promptly, but after a time payment was deferred until the paper depreciated to less than one-third of its face value. In order to meet their current expenses the natives were forced to realize on it almost as soon as they received it, and large quantities of it fell into the hands of speculators, who, I am told, often bought it at the rate of 10 cents on the dollar. As very near the face value was subsequently paid by the Government, the speculators made quite a handsome profit.

It was at this time that the Government made an investigation of the situation, and, realizing the injustice being done to the native, it was determined that the monopoly should cease on the 31st of December, 1882; cultivators of leaf tobacco were freed from Government supervision from July 1 of the same year, and the manufacture of cigars commenced on the 1st of January, 1883.

SURRENDER OF THE MONOPOLY.

In giving up this monopoly the Government must have been prompted by motives of justice and benevolence, for it was a very unwise move, viewed from a financial stand-point, the gross revenue received from the monopoly being about $4,000,000 a year, and between three and four hundred officials

were employed in the tobacco department of the local government, for whom it was necessary to provide employment of some kind. An effort was made to cover the deficiency in the revenue by an increase in the price of "cedulas personales," and commercial and industrial licenses and export dues on leaf and manufactured tobacco were levied; but it is said that all this has not augmented the revenue to the desired figure. The price of the license for manufacturing tobacco was fixed at $100 per annum, and was increased 5 per cent. last year. A general license, or "primera patente," to buy and export all kinds of goods, produce, and merchandise cost, three years ago, $600 per year, and a merchant holding one was allowed a rebate of 60 per cent. on a tobacco manufacturer's license. But the price of this license has been increased $5 per annum since then, and is now $615.

EXTENT OF THE INDUSTRY.

The tobacco trade between the Philippines and the United States is so very small that it is very probable that the magnitude of this industry will be a matter of surprise to our merchants and manufacturers. The firms engaged exclusively in the tobacco trade with head-quarters at Manila are the Compania General de Tabacos de Filipinas, Baer, sr., & Co., and A. Germann & Co.; the two first own large tobacco estates. The Compania General has a capital of $15,000,000, employs nearly 10,000 hands—6,000 on its plantations and 2,500 women and 900 men in its factories at Manila—and produces 80,000,000 cigars, 400,000,000 cigarettes, and 5,000,000 pounds of cut tobacco annually. It is a Spanish company, while the other two firms are German. There are also six other Spanish firms, a number of Chinese, and a few natives, who are dealers only.

The best tobacco comes from the provinces of Cagayan and Isabela on the island of Luzon, the average annual yield from these being from 60,000 to 100,000 tons. Tobacco is also grown in the provinces of North and South Ilocos, Abra, Lepanto, Nueva Exija, and Union, all on the island of Luzon, and on the islands of Cebu and Panay. The tobacco produced in the five provinces named is called "Igorrotes," while that from Cebu and Panay is designated as "Visayas."

METHOD OF CULTIVATION.

The method of cultivating and curing differs but little, if any, I think, from that followed in all tobacco-producing countries. The earth is well plowed and harrowed and the seed sown in September. About six weeks later the young plants are transplanted about 2 feet apart, and the field is kept free from weeds and otherwise carefully attended to until February, when the plants are almost ripe. The crop is gathered in March and April. It is then made up into "hands" of 100 leaves each, the leaves of each hand being fastened together at the stem ends with strips of bamboo fiber. These hands are then hung up in rows upon bamboo poles under long sheds, which are open on all sides, and when they are almost dry they are piled up

on the ground and allowed to ferment. The leaves are then dried again and packed into bales for shipment to Manila, where they are repacked and pressed into bales for export or sent to the factories here to be converted into cigars and cigarettes. It is not sold by weight at the plantation, but by the "fardo," which contains forty hands.

MANUFACTURE.

All the tobacco manufactured here is made into cigars and cigarettes; pipes are never used, and no one chews tobacco except the natives, who frequently chew a piece of natural leaf with their betel-nut, as it makes the saliva a little nastier than the plain betel and hence is more highly relished by them. But plug, fine cut, and pipe tobacco are never seen here.

CLASSIFICATION.

The tobacco is classified at the plantation into first, second, third, fourth, fifth, and sixth grades, according to the size and quality of the leaves, and it is said that the classification would be very satisfactory but for the tricky methods of the Chinese speculators. The latter do not always wait to buy the tobacco after it has been regularly prepared and classified at the plantation, but go out among the cultivators and buy it in job lots as it lies piled under the sheds, classifying it to suit themselves, working in low-grade leaves with the first grade, and thus realizing a more substantial profit than they would have done if the regular system of classification had been followed. Hence tobacco is not infrequently met with on the market masquerading as first-class that will classify but little better than a good second, and so on down the six grades.

PRICE.

The standard price per fardo at the plantation is $14.25 (Manila currency) for first, $9 for second, $4.12 for third, $1.50 for fourth, 50 cents for fifth, and 25 cents for sixth. These prices are 50 per cent. higher than those paid by the Government under the monopoly, and there is an agreement between all dealers that they shall not vary no matter what the condition of the crop or supply may be. Spot cash is the rule in all transactions, except where tobacco is exported, when the consignment is drawn against in the regular way. The price for export last year fluctuated some, but ranged from $36 per quintal of 110 pounds for first-class to $12 for fourth.

AREA UNDER CULTIVATION.

It has been estimated that the total area of tobacco land under cultivation is about 60,000 acres.

EXPORT DUTY.

Export duty is charged for the gross weight of both the raw and manufactured leaf, with a discount for tare. For cigars it is fixed at $4.80 per 220 pounds, less 40 per cent. for tare. For the Cagayan and Isabela leaf it is $6 per 220 pounds, Visayas $3, and all other leaf $1.80, less 12 per cent.

ANNUAL PRODUCTION.

Under the monopoly the Government kept a careful record of the tobacco crop, and it was possible at all times to obtain reasonably accurate statistics concerning it; but under the present system it is almost impossible to do so, as each dealer keeps a record of his own transactions only, if he keeps one at all. From the most reliable sources accessible I have succeeded in obtaining the following statistics of production and export, which may be accepted as at least approximately correct.

The Government crops for twenty years, or from 1860 to 1880, averaged per annum as follows:

Province.	Quantity.	
	Quintals.	*Tons.*
Cagayan	87,965	4,839
Isabela	60,539	3,329
South Ilocos	1,257	69
North Ilocos	19,579	1,077
Abra	3,022	167
Lepanto	213	12
Union	14,609	804
Nueva Exija	13,771	758
Visayas	17,584	968
Total	218,519	12,023

I have been unable to find any accurate record of the crops for 1881–'83, but have found data showing a marked increase in 1884–'87, as will be seen by the following table, which shows also to what countries the major portions of the crops were exported:

Exports of tobacco and total crop.

Whither exported.	1884.	1885.	1886.	1887.
Spain.....tons...	31,572	615,999	552,862	351,002
England.....do.....	56,198	12,733	11,469	5,964
British possessions .....do.....	130,797	102,161	66,689	133,500
United States .....pounds...	6,288	2,856	1,729	17,503
Belgium .....tons...	.....	16,123	9,910	26,662
China .....do.....	6,551	1,463	25,299	34,707
All other countries.....pounds...	288	855	1,729	1,503
Total crop.....tons...	225,121	748,479	650,724	551,843

Of the total amount exported during the four years designated 5 tons and 98 pounds were shipped from Cebu and 1 ton and 685 pounds from Iloilo.

The total shipment of cigars last year (1888) was 112,074,000, and of leaf tobacco 1,074,279 tons, as follows: Cagayan and Isabela, 518,106; Visayas, 312,701; Igarrottes, 234,729; miscellaneous, 8,743.

Spain took 10,898 tons of raw leaf and 26,715,000 cigars, while England and the British possessions had 164 tons of leaf and 17,871,000 cigars.

Of last year's exports the United States are accredited with 646,900 cigars, quite a large percentage of which went to San Francisco consigned to Honolulu; 125,000 were shipped direct to New York and 80,000 to Boston. In 1887 986,000 cigars were shipped to the United States, 722,500 of which went to New York and 74,000 to Boston.

Spain, in 1887, contracted for 1,480,000 tons of leaf, to be delivered from July, 1887, to June, 1889, as follows: Cagayan and Isabela, 567,000; Visayas, 550,000; Igarrottes, 363,000.

Nearly all of this amount has been delivered by the Compania General. It is expected that the Farming Company, now established at Madrid, will in future take something like 8,250 tons annually, and that the contract with the Compania General de Tabacos de Filipinas for 1889–'91 will be fully as large as that for the past two years, if not larger.

It is yet too early to estimate with any degree of accuracy the prospect for this year's crop. The general impression, however, is that it will be smaller than that of last year in Cagayan and Isabela, but that the quality will be superior to that of 1888. The Visayas and Igarrottes promise an average crop. The cutting will begin the latter part of the present month.

MANILA TOBACCO FACTORIES.

There are twelve large tobacco factories in Manila, named as follows: La Flor de Isabela, the factory of the Compania General, which manufactures seventy-five brands of cigars, ten brands of cheroots, six grades of cut tobacco, and eight brands of cigarettes; La Hensina, the factory of Hens & Co., which manufactures two brands of cigars, "La Hensiana" and "El Capitan General"; El Oriente, the factory of A. Germann & Co., which manufactures four brands; La Primarera, which manufactures two brands, and the following, which manufacture one brand: La Insular, Maria Christina, La Exportadora, La Puerta del Sol, La Constancia, La Perla Espanola, Para Usted, and La Honradez.

These factories, in the aggregate, give employment to about 11,000 persons. Besides there are numerous small factories owned by natives and Chinese, the latter making, as a rule, a cigar not at all creditable to Manila.

In 1887 there were 121,350 tons, gross, of cigars exported, and last year 184,548 tons.

ALEX. R. WEBB,
Consul.

UNITED STATES CONSULATE,
Manila, March 9, 1889.

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CUBA.

MANICARAGUA VALLEY.

REPORT BY CONSUL EHNINGER OF CIENFUEGOS.

Referring to my dispatch No. 79, of January 18 last, in which I allude to the difficulties in procuring reliable information concerning the tobacco culture of this consular district, I have now to confirm what I then stated, viz, that no reliable data can be obtained in this port, either from private or Government sources. No statistics on the subject exist, so far as I can learn, and I have been compelled to collect from individuals such meager intelligence as may be available for the present report.

On one point there seems to be no doubt, *i. e.*, the superior quality of the tobacco produced in what is known as the "Manicaragua Valley." All concur in assigning to this particular product qualities of aroma, combustibility, elasticity, and fineness of texture excelled, if at all, only by the best "vegas" of the "Vuetta de Abajo."

This tobacco has been for some time in the market, although only of late years has much attention been paid to it by Havana dealers, owing to the defects in curing and selecting which formerly existed, and which have been gradually remedied as experience has shown the necessity for it.

I beg to accompany this report with a tracing of the portion of my consular district which embraces the valley referred to, in order that some idea may be formed of its extent and capacity of increased production, as I apprehend this is one of the objects for which the report has been called for. Said tracing has been taken from the only approximately correct map of the island (that of Pichardo); and I say advisedly approximately correct, as in nearly four hundred years there has been no regularly organized survey made of the island or even of its coasts, save in isolated portions. No triangulation has ever been made of the interior, and the map of Pichardo referred to has been collated from minor surveys, connected where possible by the reliable surveys of lines of railroads, made in most instances by foreigners. This is the more remarkable when it is notorious that the country possesses a thoroughly educated corps of topographical engineers.

To return to the valley of Manicaragua. The undeniable excellence of the tobacco raised along the River Arimao is due undoubtedly to some peculiar quality of the land. This, as far as I can learn, is a sandy loam, analogous in its conditions to that of the Vuetta Abajo. No analysis, so far as I can learn, has been made of the soil, but the fact that no fertilizers have been found necessary would seem to demonstate its fertility. The valley is watered by numerous brooks ("arroyas") emptying into the Arimao, but a small portion of which are shown on the tracing. I have not heard of any damage by inundation or drought, as has frequently occurred in the Vuetta

Abajo, nor of any great variation in the flow of water, which in the Arimao seems to be uniform throughout the year. The gradual clearing of the woods may in time influence the meteorological conditions, but not to a great extent, as the brooks feeding the river rise from springs at the base of the mountains.

In order to get some data respecting the tobacco culture I addressed by letter one of the small planters (there are no large plantations), and beg to subjoin a translation of his replies to my questions:

The seed is sown broadcast from about the 15th of August to the 8th of September in a sheltered piece of ground to form the nursery ("semillero"); the plants are left to attain a height of 4 inches. No fertilizers are used, the land being sufficiently rich. To prepare the land for planting all brush, grass, and weeds are removed, and the ground is plowed four times and afterwards furrowed to receive the plants. The plants are taken from the nursery in the morning and planted in the evening of the same day. This has been shown by experience to be the best way. Care must be taken to keep the ground free from weeds and to prune the tops of the plants, in order to make them spread; also, the suckers from the roots are to be removed. The pruning is done with the nails of the thumb and forefinger. Care must also be taken to remove the insects which attack the plants. The natural enemies of the plant are the *cachazudo* (our tobacco worm), the *babasa* (a slimy slug which leaves its trace on the leaf and destroys it), the *Cogallero valador* and the *mariposa* (a butterfly produced by the former which lays its eggs on the leaf and destroys it). These insects have to be picked off by hand and destroyed as fast as they appear, giving much work. The first cutting is made from three to four months after planting, varying according to circumstances; the other cuttings from thirty to forty days after the first. After cutting, the leaves are hung on poles 12 feet long placed horizontally on forked sticks, and left in the open air for a day or two (not, however, during the night or in rainy weather, as any drop of water falling on the leaf is injurious to it). After this the poles filled with leaves are taken to the drying-house and placed horizontally to cool for twenty-four hours. At the end of this time the poles are placed as close together as possible and left so for three days. This is called the first heating ("calentura"). After this the poles are separated again to allow the leaves to cool. The tobacco is left on the poles a sufficient time to become perfectly dry, the length of time depending on the weather. In making the heaps preparatory to packing a time is chosen when the leaves are softened by the atmosphere, and the leaves are then taken off the poles and placed in a heap in a sheltered spot. A preparation is then made of tobacco stems left in water until fermentation takes place, and with this liquid each layer of leaves is sprinkled before another layer is placed. The tobacco is packed for transport in bales made of the fine bark of the top of the palm-tree and tied with ropes made of the majagua bark; in each bale 50, 60, or 80 bunches of leaves are placed. The tobacco is assorted into seven classes, from first to seventh class. The ruling prices are from $30 to $44 the horse-load (4 bales), without choice. Sales are made to Cienfuegos, Havana, Santa Clara, Espuanza, and Sagua. The crops have of late varied from 5,000 to 6,000 bales. One man can attend to 15,000 plants, and in a caballeria (33 acres) 250,000 plants may be raised. No calculation can be made of the area in cultivation, as all are small farmers and raise but little. There is room for much more cultivation. By mules and carts the crops can be taken to Santa Clara, Espuanza, Ranchuelo, Cruces, and Cienfuegos, and from these points there are railroads. The prices are, for hauling, $1 or $2 per horse-load (4 bales), according to the distance. This is generally on the buyer's account.

So far my informant, who, as I said before, is one of the small planters who form of the bulk of the producers of tobacco in the valley. There is no doubt that capitalists, by conducting operations on a larger scale and introducing improved methods, could do much better than these men.

Although in the present report I have confined myself to the valley of Manicaragua, I would not be understood to say that a very good quality of tobacco is not raised in other parts of this consular district, notably so in localities near Santa Clara. I shall cheerfully communicate from time to time information concerning the crops, quantities produced, prices, and any other information which may be considered necessary and which may be in my power.

HENRY A. EHNINGER,
Consul.

UNITED STATES CONSULATE,
Cienfuegos, May 18, 1889.

SAGUA LA GRANDE.

REPORT BY COMMERCIAL AGENT MULLEN.

PRODUCTION.

This consulate can not be considered a tobacco-growing district, and, although the finest grades are to be found therein, and certain places hereinmentioned produce fine tobacco, there is not capital enough invested to produce sufficient for exportation, the growers in most cases being employed on sugar estates during the grinding or crop season and leaving the growth of the tobacco in charge of boys.

The following are the places in this consulate where tobacco is principally grown: Quemado de Guines, Calabazar, Encrucijada, and Santo Domingo. In the two first named places a very fine class of tobacco is produced, and good prices obtained for it. The tobacco grown in Santo Domingo and Encrucijada is, in most cases, of a coarse grade, and contains a great many veins.

The tobacco crop of last year was very small, amounting to some 1,500 bales. The coming crop is large and good, and will produce from 2,500 to 2,800 bales.

The color of the tobacco in this jurisdiction is firm and does not vary, that is to say, the dark leaf is invariably strong and the light-colored leaf invariably mild. In Vuelta Abajo (lower country) this does not occur, as the tobacco for exportation is planted under the shadow of bushes, where it loses its color but retains its full strength.

The recent cyclone occasioned great damage to the tobacco crop, and the result is noticed in the inferior class of tobacco in all places, the growth being stunted and deprived of its strength. It is also claimed that this tobacco loses its strength daily, and can be noticed in the cigars and cigarettes already manufactured.

CULTIVATION.

The grower, in some cases, makes a contract with some buyer for the entire sale of the crop, and when the time for cutting arrives receives so much for each plant, according to its size and quality. In most cases, how-

ever, the tobacco is bought in bales weighing from 90 to 150 pounds and worth from $17 to $30 per hundred-weight. In this district the following is the mode of marking: Wrapper, 1, 2, 3, 4; filling, 5, 6, 7, 8, 9. In buying and selling these numbers are first to be considered, afterwards the weight.

MARKET.

The head-quarters for the sale of all this tobbaco is at Santa Clara, where the first purchasers prepare the different grades and establish the prices. At this place the good and bad are mixed, and then sold by samples. In some cases a great amount of what is known as green tobacco (that is, tobacco not properly cured) is purchased and mixed with good leaf. It is claimed that this class of tobacco decays rapidly and becomes worm-eaten and worthless.

The tobacco of this district differs from that of Vuelta Abajo, inasmuch as the dark leaf is a little bitter to the taste, does not retain the fire, and, if very strong, affects weak throats. The Vuelta Abajo leaf is very elastic and contains very few veins, whereas that produced here is exactly the opposite. This is due to the better care and attention paid to the culture and preparation of the leaf, as a geater amount of capital is invested and intelligent operatives are employed in planting, cutting, sorting, and preparing the leaf for the market.

D. M. MULLEN,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Sagua La Grande, March 13, 1889.

SANTIAGO DE CUBA.

REPORT BY CONUL REIMER.

I regret to say that the extreme difficulty of obtaining authentic information and statistics only enables me now to answer Department's circular of January 8, 1887, demanding a report on tobacco and its cultivation in this consular district.

The reason why the tobacco in this consular district is not equal to that of the "Vuelta Abajo" or Havana district can no doubt be found in the difference of the chemical properties of the soil, and also the little care taken in preparing the leaf.

CULTIVATION.

Tobacco is cultivated in this consular district on the same principle as in the Vuelta Abajo, only, owing to the cheap price it brings, the plants are not as carefully selected, and when ripe for drying the whole plant is cut at once, instead as in the Vuelta Abajo, where leaf by leaf is taken as soon as ripe.

This fact of taking at once the whole plant naturally greatly deteriorates the quality, as some leaves are riper than others; and all undergoing the same

process of drying at the same time, some leaves undergo more curing than others, which spoils them.

It would be well here to give a description of the mode of cultivating and curing the tobacco as practiced in this province of Santiago de Cuba. Care is taken to choose level land, if possible, near some running stream. Light sandy subsoil, with rich alluvial soil, is necessary. Guano is never employed as it is in the Vuelta Abajo, to supply the defects of the soil; and it is asserted by people well informed on the subject that fertilizing tobacco fields in this manner gives to the leaf a peculiar aroma which is not agreeable.

As the young tobacco plants when replanted are extremely delicate, care is taken to free the soil from all living vegetable matter, and break up all lumpy earth, and remove all stones.

The tobacco is sown in November in what is called the "semilleros." After the young plants have grown to a proper height, which takes about fifty days, they are transplanted. This transplanting has to be done when the soil is soft, as, should the smallest root of the young plant be damaged, it will die. The young plant is then carefully transplanted in the field which has been prepared for its reception as described. The distance left between each plant is about 18 inches. Then the plant is left to itself, and, although not needing much irrigation, light showers are necessary to further its growth. This fact will no doubt somewhat damage the crop now about to be gathered, as we have had no rain whatever for the past three months.

CURING.

From the 15th of this month* to the 15th of April the tobacco is cut, not, as in Havana, leaf for leaf and the leaves at once assorted, but the whole plant is taken out and conveyed to the drying-houses, where it is suspended on long poles placed horizontally for thirty to forty days, according to the weather, in order to cure it, In very damp weather even fires are lighted in these drying-houses to prevent the leaves from sweating. Then for four days the plants are put in heaps in rooms (where there is no ventilation) to produce a second fermentation and kill all resinous matter which is natural to the plant. This second fermentation gives a uniform color to the leaves. After these processes the leaves are stripped from the stalks and bunched (manogados) and baled, of course after being properly assorted.

CONSUMPTION AND PRODUCTION.

This mode of producing marketable tobacco does not tend to make high grades and qualities, and the consequence has been that very little more than sufficient tobacco for home consumption is produced. A quantity of the tobacco grown here is distributed among the island ports, and quite a considerable number of bales go to Havana to be worked in with the Vuelta Abajo tobacco and is sent to the markets of the world worked into Havana cigars. The cheaper grades, which are chiefly produced near the town of Gibara on

* The consul evidently means March, the month in which the report was written.

the north coast, go to Germany and Spain in the leaf. The best tobacco of this consular district is grown at Mayari, near the Bay of Nipe, on the north coast of this island; Manzanillo, on the south coast, produces an excellent tobacco, which, however, has a slightly bitter taste to which a smoker easily accustoms himself.

The last crop of Mayari tobacco, estimated by one of the largest growers of that jurisdiction, amounted to about 10,000 quintals of 100 pounds each. This crop was sold as follows:

	Spanish peso dollars.*
1,000 quintals	20 to 25
2,000 quintals	14 17
3,000 quintals	10 14
6,000 quintals	8 10

Of this crop the lowest grade of 6,000 bales was sold to Germany and Spain, the rest being consumed here.

The Cuba tobacco, so called because it comes from the jurisdiction of Santiago de Cuba, amounted last crop to 3,000 quintals, all of which was sold to Germany at $9.50 to $9.75 per quintal.

The Yara tobacco crop, comprising the jurisdiction of Manzanillo, last season amounted to 5,000 quintals, the largest portion of which went to Havana and Germany. At the end of the crop 1,000 bales were shipped to New York at from $17 to $18 per 100 pounds.

The lowest grades of tobacco are the Sagua and Gibara tobacco. Sagua produced last crop 1,500 bales, of which 500 bales are in this city still unsold, and likely to remain so, owing to their miserable quality. Gibara produced last crop 30,000 bales, the largest part of which was sold to the Spanish Government at from $8 to $9 per 100 pounds.

MANUFACTURE OF CIGARS.

There is a large number of cigar factories in Santiago which manufacture cigars for export to Spain. The only factories here that have successfully exported cigars to the United States are those of Bartolomi Fabri and Juan Vivar. Their cigars, although not well known, have always found a ready market at home. The prices vary from $20 to $40 per thousand, and, although not having the finish of a Havana cigar, are well made and liked by all Americans who know them. I continually receive requests to order these cigars from Americans who have visited this city. In Manzanillo the Gordilla factory manufactures an excellent cigar, the price of which is about $5 per thousand higher than the Santiago cigar.

As soon as I can find time I shall make a visit to the tobacco-producing districts comprised in this consulate, and shall then be able to give you a fuller and more detailed report on the crop being gathered now.

OTTO W. REIMER,

UNITED STATES CONSULATE, *Consul.*

Santiago de Cuba, March 15, 1889.

*1 Cuban peso = 93.2 cents American.

SOUTH AFRICA.

REPORT BY CONSUL HOLLIS, OF CAPE TOWN.

Although a report of the culture and trade in tobacco in this country may not possess much commercial value, yet a brief description of the methods of planters and the aim and endeavors of those having charge of this important interest may not be without value.

That there is an abundance of land suitable for tobacco growing there can be no question. The climate, also, is all that could be desired, being sufficiently varied to suit the requirements of many varieties, and in most sections free from the danger of frost.

The greatest drawback to the successful and profitable cultivation of tobacco for export lies in the planters themselves; in their neglect to choose the proper soil for the different kinds, failure to properly prepare the ground and provide the dressing most suitable to the wants of the plants and proper care in the manipulation of the leaf.

Since the advent of the tobacco expert engaged by the colonial government five years ago, who is doing his best to educate planters in the requirements stated above, considerable improvement has been made, and ere long South Africa will take her place among the tobacco-exporting countries.

A gratifying example of this progress was practically exhibited a few months ago in the case of one planter who purchased of a neighbor several tons of the dried leaf and fermented it according to the formula given him and realized a net profit of 8 cents per pound.

Only such practical demonstrations will rouse the planters to take advantage of their splendid opportunities and draw them from their old time conservative ways.

The usual method of preparing tobacco here is simply to dry the leaves, seldom subjecting them to fermentation, then to spin the leaves into a rope and form a hard roll of about 6 pounds' weight. Tobacco so treated is unfit for anything but to be used for sheep wash.

In nearly all the tobacco grown here there is an absence of the proper amount of lime and potash and a superabundance of nitrogen, the latter being attributed to the lavish use of sheep droppings, which not only gives a too luxuriant growth to the plant, but sometimes imparts its odor to the leaves. The consequent result is poor combustion and a vile smell.

In 1886 the total production of tobacco in the colony was 1,632,746 pounds, of which the Oudtshoorn district gave nearly 1,000,000 pounds.

In 1875 the total yield was 3,060,244 pounds, of which the same district gave nearly 2,500,000 pounds. Later statistics I have not been able to procure, but this year the agricultural department will endeavor to secure an exhaustive census in all branches of agricultural products.

An analysis of the soil from thirty localities reveals the following facts of composition:

	Per cent.	
Organic matter	1.5	to 64
Lime	0.10	1
Potash	0.10	1.5
Chlorine	0.005	2

I get the following as the result of European analyses of tobacco, and give a comparison of colonial product:

Composition.	European.		Colonial.	
	Maximum.	Minimum.	Maximum.	Minimum.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*
Potash	52.7	11.4	36.71	13.22
Lime	54.3	18.1	43.73	10.03
Phos-oxide	10.4	1.2	4.89	0.5
Chlorine	17.6	0.4	23.41	5.79

Foreign tobacco contains of nicotine 0.6 to 3.35 per cent. The Oudtshoorn leaf shows from 1.13 to 6.95 per cent.

I am unable to give the amount of tobacco brought into the colony from the Transvaal, but it is quite considerable, and is usually in the granulated form prepared for pipe smoking. The best of it is of fair quality, and is much used here. The methods of growth and preparation are the same as here. The following table will show the importation into the colony of the various products of tobacco. I would direct particular attention to the great increase in the importation of cigars and cigarettes. Nothing, I am convinced, could better demonstrate the increasing wealth of the colony than this evidence of the ability of the people to indulge in such luxuries.

Tobacco imports.

Description.	1886.	1887.	1888.
	Pounds.	*Pounds.*	*Pounds.*
Unmanufactured	157,868	111,541	144,726
Manufactured	125,621	146,711	148,977
Cigarettes	18,375	26,357	46,443
Snuff		8	26
Cigars	50,332	70,430	103,645

American cigarettes are in general use all through South Africa, and in my opinion a larger trade in cigars, in competition with the German made, can be done.

GEO. F. HOLLIS,
Consul.

UNITED STATES CONSULATE,
Cape Town, South Africa, 1889.

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